

ENVIRONMENTAL WATER ACCOUNT  
ACTION SPECIFIC IMPLEMENTATION PLAN

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**APPENDIX A**

**Species and NCCP Communities Considered, but not  
Evaluated in the EWA ASIP**



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### Species and NCCP Communities Considered, but not Evaluated in the EWA ASIP

Table A-1 at the end of this appendix presents the list of MSCS species initially evaluated for incorporation into this ASIP. The species list was initially reviewed for species that do not inhabit habitats the lie within the EWA Action Area. The next screening was based on the relationship of rice farmland to the life cycle of the species. Species whose a portion of or the entire life history/cycle may rely on rice farmland have been retained for detailed analysis in this ASIP. Species that may visit riceland occasionally, but do not rely on the habitat, are described in this appendix. Chapter 3 provides additional details regarding the screening process.

#### 1.4.2.2 Species Associated with Seasonally Flooded Agriculture that will not be Affected by EWA Actions

There are a number of MSCS-covered species that occupy habitats in or near seasonally flooded agriculture land (e.g., flooded rice land) that will not be affected by EWA land fallowing actions. The rationales to support determinations of no effects to the species are provided in the following text.

##### *Western Spadefoot Toad*

Levees and drainage ditches are potential habitat for the western spadefoot toad. The proposed action would not affect levees or ditches adjacent to rice fields.

##### *Double-Crested Cormorant*

Double-crested cormorant use levees adjacent to rice fields to dry their wings. The proposed action would not affect levees adjacent to rice fields.

##### *American Bittern*

American bitterns forage in flooded rice fields and adjacent irrigation ditches during the winter primarily for invertebrates. The proposed action would not prevent flooding of fields in the winter.

##### *White-tailed Kite*

During the winter white-tailed kites forage for small rodents, insects, frogs, and snakes over flooded and idled rice fields. The proposed action would not prevent the winter flooding of fields. The proposed action has the potential to increase the overall acreage of idled rice fields increasing the forage base for this species.

##### *Bald Eagle*

Bald eagles forage for ducks, geese, and sometimes fish over large areas including rice fields. However, this species is highly mobile with a home range radius of approximately 1 mile, whereas the largest possible block of idled land will be 160 acres (½ mile X ½ mile). The EWA proposed action would not reduce the forage supply of waterfowl and fish within the Sacramento Valley.

***Swainson's Hawk***

Swainson's hawks forage in idled rice fields. The proposed action has the potential to increase the overall acreage of idled rice fields increasing the forage base for this species.

***Ferruginous Hawk***

Ferruginous hawks forage for small mammals in idled rice fields. The proposed action has the potential to increase the overall acreage of idled rice fields.

***Golden Eagle***

Golden eagles forage over large areas including rice fields near their nests in the foothills surrounding the Central Valley. However, this species is highly mobile with an extensive home range, whereas the largest possible block of idled land will be 160 acres (½ mile X ½ mile).

***Merlin***

During the winter merlins forage for songbirds and shorebirds over flooded and idled rice fields. The proposed action would not prevent the winter flooding of fields. The proposed action has the potential to increase the overall acreage of idled rice fields.

***Peregrine Falcon***

During the winter peregrine falcons forage for ducks and shorebirds over flooded and idled rice fields. The proposed action would not prevent flooding of fields. The proposed action has the potential to increase the overall acreage of idled rice fields.

***Prairie Falcon***

During the winter the prairie falcon forages over flooded and idled rice fields. The proposed action would not prevent flooding of fields. The proposed action has the potential to increase the overall acreage of idled rice fields.

***Mountain Plover***

The mountain plover uses disked rice fields in late winter to find insects. The proposed action would not prevent disking of these fields. This would ensure forage habitat is maintained for the mountain plover.

***Short-eared Owl***

The short-eared owl could find a suitable prey base in idled rice fields. The proposed action has the potential to increase the overall acreage of idled rice fields.

***Northern Harrier***

The northern harrier could find a suitable prey base in idled rice fields. The proposed action has the potential to increase the overall acreage of idled rice fields.

***Long-eared Owl***

Long-eared owls can be found in trees along rice fields and forage over idled fields at night. The proposed action has the potential to increase the overall acreage of idled rice fields and would not affect woodlands.

***Burrowing Owl***

Burrowing owls can be found on the levees bordering rice fields. These levees would not be affected by rice idling.

***Bank Swallow***

During the spring and summer, bank swallows can be found foraging for insects over rice fields. However, this species is highly mobile with a foraging range of 8-10 km, whereas the largest possible block of idled land will be 160 acres (½ mile X ½ mile).

***Bewick's Wren***

Bewick's wrens are casual visitors to rice fields in the fall and winter. They are sometimes found feeding along weedy irrigation ditches or in fallow rice fields. The proposed action would not affect irrigation ditches and would increase the acreage of idled rice fields.

***Loggerhead Shrike***

Loggerhead shrikes can be found hunting along the borders of rice fields and in fallow rice fields. The proposed action would increase the acreage of idled rice fields and would not affect adjacent ditches.

***Lark Sparrow***

Lark Sparrows are casual visitors to rice fields in the fall and winter. They are sometimes found feeding along weedy irrigation ditches or in fallow rice fields. The proposed action would increase the acreage of idled rice fields and would not affect adjacent ditches.

**AMERICAN BITTERN (*Botarus lentiginosus*)**

**Legal Status.** The American bittern is listed as a California Special Animal (CDFG 2003), a Migratory Nongame Bird of Management Concern (USFWS 1995), a Bird of Conservation Concern (USFWS 2002), and a Sacramento Fish and Wildlife Office Species of Concern (Sacramento Fish and Wildlife Office 2003). This species is considered a Federal Species of Concern (formerly a species under consideration for listing), but is not listed under the CESA (CDFG 2003).

**Historical and Current Distribution and Status.** The wintering range of the American bittern ranges from southern California to the south Atlantic Coast; the breeding range extends from mid-United States to Canada (Gibbs et al. 1992). In California, American bitterns live mainly in fresh emergent wetlands west of the Sierra Nevada and they commonly breed in the Central Valley from October to April. The lowland breeding population may be nonmigratory; bitterns often migrate from Northern California during the winter to augment the nonmigratory populations in

Southern California. The current abundance of this species is largely unknown due to its secretive nature.

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** The American Bittern occurs in all 14 ecological zones and throughout the EWA Area of Analysis during some portion of its annual cycle.

**Life History and Habitat Requirements.** American bitterns forage in fresh or saline, tall emergent wetlands, and less frequently in shallow water of lakes, rivers or estuaries. American bitterns have also been seen visiting artificial impoundments at wildlife management areas (NatureServe Explorer 2002). This species seems to require wetlands of a minimum of 2.5 to 5 hectares in area, but smaller wetlands may serve as important alternate feeding sites and “stepping stones” on movements between larger wetlands (NatureServe Explorer 2002). Bitterns feed on insects, amphibians, fish, crayfish, small mammals, snakes, invertebrates, and birds. These birds hunt by standing motionless or slowly stalking, and then striking and grasping prey quickly with the bill (Granholm 1990). Feeding occurs most actively at dusk and during the evening hours. Their striped coloration may serve to conceal them from prey, competitors, and predators in habitats with dense, vertical emergent vegetation (NatureServe Explorer 2002). Bitterns are solitary, taking cover in tall dense emergent vegetation, near logs or stumps or on emergent plants (Granholm 1990).

American bitterns breed in seasonal, semipermanent, temporary, permanent, fen, and restored wetlands, and in hayland, cropland, and idle grasslands. Nests are constructed in shallow water, on the ground, or floating in areas concealed in tall, dense, fresh emergent vegetation using materials such as matted emergent aquatics, herbaceous stems, sticks and leaves (Granholm 1990). Bitterns have also been observed nesting in grassy upland areas (NatureServe Explorer 2002). Egg-laying begins in late April to early May and continues to mid-June (NatureServe Explorer 2002). Bitterns are solitary nesters with a clutch size of 3 to 5 eggs; hatchlings leave the nest after 2 weeks. The approximate lifespan of an American bittern is 8.5 years (Klimkiewicz 2002).

**Reasons for Decline.** Populations have been threatened due to loss and degradation of wetland habitat as a result of drainage, filling, siltation, pollution, eutrophication, non-native plant invasion, and overgrazing of emergent vegetation (Granholm 1990, NatureServe Explorer 2002). Bitterns could also be affected by amphibian declines, incidental illegal shooting, ecological succession, and human disturbance along the edges of wetlands (NatureServe Explorer 2002).

**Designated Critical Habitat.** None.

**Conservation Efforts.** Conservation efforts have not been identified for this species.

**Recovery Plan and Recovery Guidance.** A recovery plan has not been prepared and recovery requirements have not been identified for this species.

**Research and Monitoring Gaps.** Bitterns are solitary and elusive birds that inhabit fairly inaccessible habitat, and little is known about the abundance and biology of this species (NatureServe Explorer 2002). Point-counts using tape-recorded vocalizations would help to ascertain more accurate abundance and population trend data for this species. In addition, a detailed, autecological study would elucidate the basic features of the breeding biology and specific habitat requirements of this species (NatureServe Explorer 2002). No information is currently available about the role of predation in limiting bittern population sizes (NatureServe Explorer 2002).

#### **American Bittern Citations**

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#### **AMERICAN PEREGRINE FALCON (*Falco peregrinus anatum*)**

**Legal Status.** The American peregrine falcon is listed as endangered under the CESA and as fully protected under the California Fish and Game Code (CDFG 2003). The American peregrine falcon was delisted from the FESA list, and is now considered a recently recovered species being monitored as part of a 5-year review plan.

**Historical and Current Distribution and Status.** Historically, resident American peregrine falcons occurred throughout most of California (CDFG 1980, USFWS 1982). The population increased during winter, when migrating birds arrived from the north (Grinnell and Miller 1944). Peregrine falcons nested throughout the state, with breeding pairs concentrated along the coast and around the Channel Islands (Grinnell and Miller 1944). Interior nesting locations included Tule Lake in Siskiyou County, Mono Lake in Mono County, and the inner Coast Ranges in Kern County (Grinnell and Miller 1944).

The population of California peregrine falcons began to seriously decline in the 1950s. Based on a conservative historical estimate, there were 100 pairs breeding in California before 1947. By 1969, fewer than 10 nesting sites were believed to be active (Herman et al. 1970). In 1970, only two nesting pairs were confirmed, with probably fewer than five nesting pairs statewide (Herman 1971). In 1992, there were approximately 140 breeding pairs of American peregrine falcons in California, primarily in mountains of the central and northern Coast Ranges and Cascade Range (CDFG 1987). According to more recent information the California breeding range, which has been expanding, now includes the Channel Islands, coast of southern and central California, inland north coastal mountains, Klamath and Cascade ranges, and the Sierra Nevada.

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** The peregrine falcon occurs when migrating and as a winter visitor in all 14 ecological zones.

**Life History and Habitat Requirements.** The range includes most of California, except in deserts, during migrations and in winter. Nesting sites are typically on ledges of large cliff faces, but some pairs are nesting on city buildings and bridges. Nesting and wintering habitats are varied, including wetlands, woodlands, other forested habitats, cities, agricultural areas and coastal habitats (CDFG 2002).

American peregrine falcons nest on protected ledges of high cliffs, primarily in woodland, forest, and coastal habitats (CDFG 1980, USFWS 1982). They have been known to nest at elevations as high as 10,000 feet, but most occupied nest sites are below 4,000 feet (Shimamoto and Airola 1981). Falcons prefer to nest near marshes, lakes, and rivers that support an abundance of birds, but they may travel several miles from their nesting grounds to forage on pigeons, shorebirds, waterfowl, and songbirds (Grinnell and Miller 1944, CDFG 1980). Coastal and inland marsh habitats are especially important in fall and winter, when they attract large concentrations of water birds (CDFG 1980). The peregrine falcon breeds near wetlands, lakes, rivers, or other water on high cliffs, banks, dunes, mounds (Polite 1988-1990).

Peregrine falcons feed primarily on other birds, such as songbirds, shorebirds, ducks, and in urban areas, starlings and pigeons. Flying high above their intended prey, peregrines will “stoop” or dive and strike in mid-air, killing the prey with a sharp blow. Scientists estimate the speed of a diving peregrine to be more than 200 miles per hour (USFWS 1999).



Sexual maturity occurs at three years of age. Peregrine falcons usually nest in depressions on the edge of cliffs. These sites are known as aeries. Some aeries in Europe have been occupied for more than 300 years. Peregrine falcons may use nests built by eagles, hawks or other birds. Peregrine falcons have also nested on tall buildings. A clutch of 3 to 4 eggs is laid in April. Incubation lasts about 33 days with both adults partaking in incubating and feeding the young. Young birds can fly in 35 to 42 days (USGS).

**Reasons for Decline.** The widespread use of organochloride pesticides, especially DDT (dichlorodiphenyltrichloroethane), was a primary cause of the decline in peregrine falcon populations (USFWS 1982). High levels of these pesticides and their metabolites (byproducts of organic decompositions) have been found in the tissues of peregrine falcons, leading to thin eggshells, abhorrent reproductive behavior, and reproductive failure. Other causes of decline include illegal shooting, illegal falconry activities, and habitat destruction (CDFG 1980).

**Designated Critical Habitat.** None.

**Conservation Efforts.** The CDFG has been working with the California Peregrine Falcon Working Group and USFWS to develop and implement post-delisting monitoring guidelines (CDFG 2000).

**Recovery Plan and Recovery Guidance.** USFWS developed a recovery plan for the Pacific population of the peregrine falcon in 1982 (USFWS 1982). The objectives of the recovery plan are to re-establish a self-sustaining population in the Pacific region (California, Oregon, and Washington). A sustainable population was estimated to be 185 nesting pairs, with a minimum fledgling-success average of 1.5 per active pair. Of this minimum number of pairs required before consideration of delisting the species, 120 pairs are to be in California.

These objectives must be met through habitat and population management. Both essential breeding and nonbreeding habitats must be maintained and enhanced. Efforts must be made to maintain and increase the productivity of wild populations through prevention of human disturbances; identification and reduction of mortality factors; establishment of peregrine falcon pairs in suitable habitats; and manipulative management techniques, such as habitat modifications and rehabilitation of sick or injured birds (USFWS 1982).

Populations of peregrine falcons are now estimated at 1,650 breeding pairs in the U.S. and Canada, with additional birds in Mexico. In August 1999, the USFWS removed the American peregrine falcon from the list of endangered and threatened species, marking one of the most dramatic successes of the FESA (USFWS 1999).

**Research and Monitoring Gaps.** The role of falcons in ecological communities and the effect of falcon predation on other species of endangered birds is currently being studied by the USFWS and CDFG (CDFG 2000).

### American Peregrine Falcon Citations

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U.S. Fish and Wildlife Service (USFWS). 1982. The Pacific Coast peregrine falcon recovery plan. Denver, CO.

U.S. Fish and Wildlife Service. 1999. Peregrine Falcon. Endangered Species. Fact Sheet. <http://endangered.fws.gov/peregrin/fact%2099.pdf>

U.S. Geological Survey (USGS). Northern Prairie Research Center. Peregrine Falcon. ND Endangered and Threatened Species.

## **BALD EAGLE (*Haliaeetus leucocephalus*)**

**Legal Status.** The bald eagle is listed as endangered under the CESA and as fully protected under the California Fish and Game Code (CALFED 2000). The bald eagle is protected under the Federal Bald and Golden Eagle Protection Act. The bald eagle is listed as threatened under the FESA but was proposed for delisting in 1999 (CDFG 2003).

**Historical and Current Distribution and Status.** Historically, the bald eagle nested throughout California; however, the breeding distribution in 1992 was restricted primarily to the mountainous habitats in the northern quarter of the state, in the northern Sierra Nevada, Cascades, and northern Coast Ranges (California Department of Fish and Game 1992). Bald eagles winter at lakes, reservoirs, and along major river systems throughout most of central and northern California and in a few southern California localities. In 1992 species appeared to be increasing in most portions of the state (CDFG 1992). Today, most breeding territories are in northern California, but the eagles also nest in scattered locations in the central and southern Sierra Nevada mountains and foothills, in several locations from the central coast range to inland southern California, and on Santa Catalina Island (CDFG 2000).

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** Bald eagles are resident in the North Sacramento Valley and Butte Basin Ecological Zones. They winter or are regular visitors in Cottonwood Creek, Colusa Basin, Yolo Basin, Feather River/Sutter Basin, American River Basin, Eastside Delta Tributaries, East San Joaquin Basin, West San Joaquin Basin, Sacramento-San Joaquin Delta, and Suisun Marsh/North San Francisco Bay Ecological Zones (CALFED 2000).

**Life History and Habitat Requirements.** Bald eagle nesting territories in California are found primarily in Ponderosa pine and mixed conifer forests. Bald eagle nest sites are always associated with a lake, river, or other large water body and are usually within one mile of water (CALFED 2000). Nests are usually constructed in a tree that provides an unobstructed view of the water body and that is almost always the dominant or co-dominant tree in the surrounding stand. Snags and dead-topped live trees are important habitat components in a bald eagle nesting territory, providing perch and roost sites. The species winters throughout most of California at lakes, reservoirs, river systems, and some rangelands and coastal wetlands (CDFG 2000).

In most of California, the breeding season lasts from about January through July or August. One or two eggs (occasionally three) are laid in late winter or early spring, and incubation lasts about 35 days. Chicks fledge when they are 11 or 12 weeks old. In a matter of weeks after leaving the nest, many of the still naive young birds suddenly strike out on their own and rapidly migrate hundreds of miles to the north. In these post-nesting dispersal areas, the young birds join other bald eagles to feed on salmon and other plentiful food. Telemetry studies show that some of these young birds reach northern and western Canada before returning to California a few months later. California's resident breeding pairs remain in California during winter, typically in the vicinity of their nesting areas, except when winter conditions are too severe and they must move to lower elevations (CDFG 2000). Sometimes only about half of these

chicks will survive their first year because of disease, lack of food, bad weather, or human interference (Herron 1999).

**Reasons for Decline.** Early declines in bald eagle populations have been attributed to human persecution and destruction of riparian, wetland, and coniferous forest habitats. The most important factor that contributed to the decline of bald eagle populations, however, was a reduction in reproductive success resulting from eggshell thinning caused by DDE (dichloro-diphenyl-dichloroethylene), a metabolite of the agricultural pesticide DDT.

**Designated Critical Habitat.** None.

**Conservation Efforts.** The CDFG coordinates statewide and interagency breeding surveys to monitor the status of the bald eagle. This species has recovered as a result of extensive conservation efforts (CDFG 2000). Measures under the CALFED Bay-Delta Program are designed to restore and enhance suitable habitat for this species (CALFED 2000).

**Recovery Plan and Recovery Guidance.** USFWS developed a recovery plan for the Pacific population of bald eagles in 1986 (CALFED 2000). The status of the breeding population was considered the most important criterion for delisting the population. Numerical goals for wintering populations were not established in the recovery plan because of annual fluctuations in migration patterns and habitat use. Wintering habitat must be managed, however, to support existing populations and allow for the proposed increase in the bald eagle population.

Delisting would be considered on a regional basis if four criteria were met: (1) a minimum of 800 pairs nested in the seven-state Pacific recovery area; (2) the nesting pairs produced an average of at least one fledged young per pair, with an average success rate per occupied site of no less than 65 percent over a 5-year period; (3) population recovery goals were being met in at least 80 percent of the management zone with nesting potential; and (4) there was no persistent long-term decline in any sizable wintering population (greater than 100 birds).

**Research and Monitoring Gaps.** Research and monitoring gaps for this species have not been identified.

### **Bald Eagle Citations**

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California. Department of Fish and Game (CDFG) 1992. Annual report on the status of California state listed threatened and endangered animals and plants. Sacramento, CA.

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## **BANK SWALLOW (*Riparia riparia*)**

**Legal Status.** The bank swallow is listed as threatened under the CESA and is considered a Federal Species of Concern (formerly a species under consideration for listing) (CDFG 2003).

**Historical and Current Distribution and Status.** The bank swallow historically occurred along the larger lowland rivers throughout California, with the exception of southern California, where the species occurred principally along the coast and at the mouths of large rivers such as the Los Angeles River (Humphrey and Garrison 1987, Laymon et al. 1988). This species has now been extirpated from southern California and its range has been reduced by 50 percent since 1900 (Laymon et al. 1988, California Department of Fish and Game 1997).

The bank swallow is currently confined to the Sacramento River above the town of Colusa and other scattered colonies in northern California. During a survey conducted in 1987, 111 colonies were located statewide and the statewide population was estimated at 18,800 pairs, about 70 percent of which occurred along the Sacramento River (Laymon et al. 1988, CDFG 1993). The last stronghold for the bank swallow is along the banks of the Sacramento River (CDFG 1992) and its major tributaries (Humphrey and Garrison 1987). The current population estimate of 4,990 nesting pairs, based on annual CDFG monitoring surveys, indicates a population decline of about 73 percent since 1987.

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** The bank swallow breeds principally along the Sacramento River; smaller populations may occur along the San Joaquin River, North Sacramento Valley, Feather River/Sutter Basin, Eastside Delta Tributaries, Butte Basin, Yolo Basin, and American River Basin Ecological Zones (however, monitoring has focused on the Sacramento River since 1988 and relatively little population information exists for other parts of the known or historical range of the species). This species also occurs as a migrant in all ecological zones.

**Life History and Habitat Requirements.** The bank swallow is a migrant that breeds primarily in the Central Valley of California and winters in South America. It arrives in California in mid-March, with bird numbers peaking in May (Humphrey and

Garrison 1987, Laymon et al. 1988). The bank swallow requires bluffs or banks with soft sand and sandy loam soil primarily adjacent to still or running water. The species constructs burrows of 2-3 feet deep into the nearly vertical eroding banks where it chooses to establish nesting colonies. Nests are lined with grasses, other plant material, and feathers (Green 1990). The bank swallow breeds and lays a clutch of 4-5 eggs in April; the young hatch in May, and 2-3 young are fledged by July each year in a single breeding attempt. The adults and young of the year remain along the riverbanks until they migrate in fall.

Most nesting colonies in the state are along the Sacramento River, where colonies averaging about 250-410 burrows each have been documented since 1986 (Humphrey and Garrison, Laymon et al. 1987, CDFG monitoring files). Gravel extraction sites, such as those along Cache Creek in Yolo County, are sometimes used for nesting. Sacramento River colonies have ranged from 78 in 1987 to the current total of 42.

The bank swallow forages by hawking insects during long, gliding flights. It feeds primarily over grassland, shrub land, savannah, and open riparian areas during breeding season and over grassland, brush land, wetlands, and cropland during migration. Bank swallows feed on a wide variety of aerial and terrestrial soft-bodied insects including flies, bees, and beetles (Green 1990).

**Reasons for Decline.** The bank swallow has been eliminated from southern California because almost every river and natural waterway has been converted into flood control channels. Elsewhere in California, rip-rapping of natural riverbanks and flood control projects have been the major causes for the decline of this species (CDFG 1997).

**Designated Critical Habitat.** None.

**Conservation Efforts.** The CDFG has mitigated habitat loss through natural habitat improvements and artificial bank creation. They have also developed a state recovery plan for this species (CDFG 2000). Measures under the CALFED Bay-Delta Program are designed to restore and enhance suitable habitat for this species (CALFED 2000).

**Recovery Plans and Recovery Guidance.** A State Recovery Plan was prepared and adopted by the Department of Fish and Game in 1992 but has yet to be implemented. The Recovery Plan identifies habitat preserves and a return to a natural, meandering riverine ecosystem as the two primary strategies for recovering the bank swallow. A recovery planning team has also been established and has had periodic meetings since 1990. The group discusses bank swallow research and recovery issues. The group cited the return to naturally functioning riparian ecosystems as the best way to preserve, recover, and conserve the many species, including the bank swallow, that are dependent on this unique ecosystem (CDFG 2000).

**Research and Monitoring Gaps.** Monitoring programs will be important to assess bank swallow abundance following implementation of restoration recommendations in the recovery plan.

### Bank Swallow Citations

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### BEWICK'S WREN (*Thryomanes bewickii*)

**Legal Status.** Bewick's wren is listed as a Bird of Conservation Concern (USFWS 2002) and a Migratory Nongame Bird of Management Concern (USFWS 1995). This species is not listed under the CESA or FESA.

**Historical and Current Distribution and Status.** Bewick's wren is a widely distributed species with breeding and wintering ranges that stretch from southern

Canada to Mexico (NatureServe Explorer 2002). Wrens are typically year-round residents in California, but populations may migrate from the north or higher elevations to southern and downslope areas during the winter (Dobkin 1990).

Populations of Bewick's wren in the central, eastern, and northwestern parts of its range have been steeply declining for some time and this species is on the verge of extirpation in the eastern U.S. (NatureServe Explorer 2002). A decline of at least 6 percent has recently been noted for populations in important foothill habitat areas of California and Washington, but the extent of or reasons for the declines have yet to be researched (NatureServe 2002).

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** The Bewick's Wren breeds and winters in all 14 ecological zones and throughout the EWA Area of Analysis.

**Life History and Habitat Requirements.** Bewick's wrens are typically found in mixed and montane chaparral and pinyon-juniper habitats, but may move into riparian habitats, woodland borders or coniferous forests with brushy understory (Dobkin 1990). Their main diet consists of insects, such as beetles, stinkbugs, boll weevils, spiders, and grasshoppers. These wrens forage diurnally in dense, shrubby vegetation within 1.3 meters of the ground, typically searching and gleaning prey in the lower limbs and branches of small trees in chaparral, pinyon-juniper, live oak and mesquite habitats (Dobkin 1990). Common predators of wrens are hawks, owls, roadrunners and rattlesnakes (NatureServe Explorer 2002).

Bewick's wrens compete with other species (e.g., House wrens, Plain titmice) for nesting sites in ground cavities, snags, rock crevices, human made structures, and other cavities. Reproduction occurs from mid-February to early August with peaks from Mid-May to late June. Clutch sizes for this species are typically 5 to 7, and young leave the nest 14 days after hatching. Parents tend to feed their young for two weeks after they leave the nest. The approximate lifespan of Bewick's Wren is 8 months (Klimkiewicz 2002).

**Reasons for Decline.** The factors causing declines of Bewick's wren are poorly known, but this species may be negatively affected by suburbanization, forest regrowth, nest parasitism, interspecific competition, and harsh winters. Island subspecies have been extirpated by habitat destruction caused by introduced livestock (NatureServe Explorer 2002).

**Designated Critical Habitat.** None.

**Conservation Efforts.** Conservation efforts have not been identified for this species. NatureServe Explorer (2002) discusses conservation and restoration issues for this species. Conservation measures could include protecting and managing open scrub woodlands, implementing an experimental nest box program, and monitoring populations.



**Recovery Plan and Recovery Guidance.** A recovery plan has not been prepared and recovery requirements have not been identified for this species.

**Research and Monitoring Gaps.** The factors causing population declines of wrens in North America remain unexplained (NatureServe Explorer 2002). Studying the current abundance, distribution, and reproductive success throughout the range is critical. Interactions with potential competitors and sources of predation are also important areas for research.

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### **DOUBLE-CRESTED CORMORANT (*Phalacrocorax auritus*)**

**Legal Status.** The double-crested cormorant is designated as a Species of Special Concern by the CDFG. This species is not listed under the CESA or FESA (CDFG 2003).

**Historic and Current Distribution and Status.** The breeding range of the double-crested cormorant stretches from Canada to Belize. The breeding range in North America has expanded in recent years (Johnsgard 1993). Non-breeding populations can also be found from Canada to Belize primarily along the east and west coasts.

The double-crested cormorant is a yearlong resident of California. August to May, double-crested cormorants are fairly common to locally very common along the coast and in estuaries and salt ponds; uncommon in marine subtidal habitats from San Luis Obispo Co. south, and very rare to the north. In the same season, they are fairly common at the Salton Sea and Colorado River reservoirs, and rare to fairly common in lacustrine and riverine habitats of the Central Valley and coastal slope lowlands

(Granholm 1990). Cormorants are more common from fall to spring in the Central Valley than during summer months (Remsen 1978). While historic nesting grounds existed in the Sacramento and San Joaquin Valleys the double-crested cormorant is not able to breed in these areas today. Coastal populations in southern California have declined significantly. The shores of the Salton Sea also once provided nesting opportunities but these areas are currently not used for breeding.

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** The double-crested cormorant occurs in the Colusa Basin, Yolo Basin, Sacramento-San Joaquin Delta, and Suisun Marsh/North San Francisco Bay Ecological Zones. It also winters in the North Sacramento Valley, Cottonwood Creek, Butte Basin, Feather River/Sutter Basin, American River Basin, Eastside Delta Tributaries, East San Joaquin Basin, and West San Joaquin Basin Ecological Zones.

**Life History and Habitat Requirements.** The double-crested cormorant is the only one of the three species of cormorants (that occur in California) that can be regularly found in freshwater habitats (Cogswell 1977). The double-crested cormorant commonly inhabits lakes, ponds, rivers, lagoons, swamps, coastal bays, marine islands, and seacoasts; usually within sight of land. It nests on the ground or in trees in freshwater situations, and on coastal cliffs (usually high sloping areas with good visibility) (NatureServe Explorer 2001).

The species' breeding period is from April to July, but it may breed considerably earlier in southern rookeries. Cormorants nest in large colonies of up to several hundred pairs (Zeiner et al. 1990). Nesting sites are often in secluded areas because this species is particularly sensitive to human disturbance (Remsen 1978). They require undisturbed nest-sites beside water, on islands or mainland. They use wide rock ledges on cliffs; rugged slopes; and live or dead trees, especially tall ones (Granholm 1990). Clutch size is usually one to seven (average typically three or four). Incubation is 24-33 days (average around 28-30), by both sexes in turn. Hatching success was 54-75 percent in three studies. Survival from hatching to fledging was 72-95 percent in two studies. First flight to water takes place at about 35-42 days. They are independent at about 9-10 weeks. Usually they first breed at three years, sometimes at two years, rarely at one year (NatureServe Explorer 2001).

The double-crested cormorant feeds mainly on fish (Cogswell 1977); also on crustaceans and amphibians. They dive from the water surface and pursue prey underwater, usually remaining submerged for about 30 sec. They prefer water less than 9 m (30 ft) deep with rocky or gravel bottom, but may catch fish as deep as 22 m (72 ft). Sometimes they feed cooperatively in flocks of up to 600, often with pelicans (Granholm 1990). Suitable nest-sites must be within 8-16 km (5-10 mi) of a dependable food supply (Palmer 1962).

**Reasons for Decline.** Pesticides, especially DDT, caused the reproductive failure of many nests. Loss of nesting habitat and disturbance from humans has been the main cause of inland population declines. El Nino events can also cause widespread population declines by reducing prey. Over harvest by hunters may also have contributed to the species decline earlier in this century.

**Designated Critical Habitat.** None.

**Conservation Efforts.** Measures under CALFED are designed to restore and enhance suitable habitat for this species (CALFED 2000).

**Recovery Plan and Recovery Guidance.** The CDFG Habitat Conservation Planning Branch recommends the following steps to recovery for the double-crested cormorant: (1) maintain ban on the use of persistent pesticides; (2) eliminate boating and other human disturbance in vicinity of nesting colonies during the breeding season; and (3) maintain habitat integrity at inland breeding areas, with particular attention to maintaining a constant water level in reservoirs (Granholm 1990).

**Research and Monitoring Gaps.** Additional information is needed to understand the potential competition for food and nest sites between the cormorant and other threatened species (NatureServe Explorer 2002).

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## **FERRUGINOUS HAWK (*Buteo regalis*)**

**Legal Status.** The ferruginous hawk is listed as a CSC (CDFG 2002), a Migratory Nongame Bird of Management Concern (USFWS 1995), a Bird of Conservation Concern (USFWS 2002), a BLM Sensitive Species (CDFG 2003), and a Sacramento Fish and Wildlife Office Species of Concern (Sacramento Fish and Wildlife Office 2003). This species is also listed on the Audubon Watchlist (CDFG 2003). This species is considered a Federal Species of Concern (formerly a species under consideration for listing), but is not listed under the CESA (CDFG 2003).

**Historical and Current Distribution and Status.** The distribution of the ferruginous hawk includes wintering habitat in the southwestern U.S. stretching from northern California south to Baja California, east through southwestern Nevada, southern Utah, Arizona, and New Mexico to central Kansas, and south to northern Mexico; and breeding habitat stretching from southern Canada (Alberta, Saskatchewan, Manitoba) to northern Arizona and New Mexico (Brown 1997, NatureServe Explorer 2002). In California, ferruginous hawks can be found throughout the state during the winter months, except for the extreme northeastern and northwestern corners (Brown 1997); they have been recorded from every California county during Christmas Bird Counts (Hunting 2000). These hawks are most common in the state in the grasslands of southwestern California and are uncommon migrants and winter residents in the grasslands of the Modoc Plateau, Central Valley and Coast Ranges. Ferruginous hawks typically reside in California from August to mid-April and leave to breed in Oregon and Canada during the spring and summer months (Brown 1997, Dechant et al. 1999). The ferruginous hawk generally does not breed in California, however, it has recently been recorded breeding in California (NatureServe Explorer 2002).

Abundance and distribution data on the ferruginous hawk outside California suggest that this species may be declining in certain locations, while showing slight population increases in other areas (Brown 1997, NatureServe Explorer 2002). Distribution of the ferruginous hawk in California has probably changed little from historical times, except for some local extirpation from the southern California coastal plain and valleys due to habitat loss. For example, suitable grassland habitat in the San Joaquin valley has decreased considerably as a result of conversion to agricultural and urban land uses (Hunting 2000). Current wintering abundance of ferruginous hawks in California could be between 400 to 500 individuals, and the population trends appear stable to increasing despite habitat loss. However, abundance data is based largely on the Christmas Bird Count, which may include survey biases, such as increased raptor survey effort (Hunting 2000).

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** The ferruginous hawk winters in all 14 ecological zones and throughout the EWA Area of Analysis except for the northern most counties such as Shasta and Tehama.

**Life History and Habitat Requirements.** Ferruginous hawks can be seen visiting open grasslands, sagebrush flats, desert scrub, hayland, cropland, shrubsteppe, low foothills and edges of pinyon-juniper habitats. They generally prefer open grassland communities and avoid high elevations, narrow canyons, and interior regions of forests (Brown 1997). Their diet consists of lagomorphs (rabbits and hares), pocket gophers, prairie dogs, ground squirrels, mice, insects, birds, reptiles and amphibians (Polite and Pratt 1990, Brown 1997, NatureServe Explorer 2002). Hawks hunt their prey during the day from perches or glide close to the ground in open, treeless area such as cropland or rangeland (Polite and Pratt 1990). Communal roosting of up to 24 individuals has been observed in some wintering areas and communal hunting has also been recorded (Brown 1997). The density and productivity of the ferruginous hawk are thought to be correlated with prey abundance cycles (NatureServe Explorer 2002).

Ferruginous hawks build their nests in exposed or remote trees and large shrubs, cliffs, utility poles, artificial platforms, ground outcrops, roofs of abandoned buildings, and river cutbanks, ranging from 0 to 25 m above the ground (Hunting 2000). Nests are constructed of 1-inch long sticks, twigs, litter, and dried manure (Polite and Pratt 1990). Territory, nestsite, and mate fidelity are common for ferruginous hawks (Dechant et al. 1999). Egg-laying begins in April, with a clutch size of 2 to 6 eggs. Incubation takes about 28 days and the young fledge at 38 to 50 days (Polite and Pratt 1990). Young hawks in tree nests may be preyed upon by eagles and owls, while young in ground nests may be preyed upon by badgers, foxes, and coyotes (Polite and Pratt 1990, Hunting 2000). These hawks are very sensitive to disturbance, especially during incubation and when prey is scarce (Dechant et al. 1999, Hunting 2000). The ferruginous hawk defends nesting territories, competes with other diurnal predators of small mammals, and tends to displace red-tailed and Swainson's hawks (Polite and Pratt 1990, Hunting 2000). The life span of a ferruginous hawk is approximately 18 years and reproductive age is 2 years (Brown 1997, Klimkiewicz 2002).

**Reasons for Decline.** The ferruginous hawk is declining in some areas of its range, but the specific factors causing the decline are poorly understood (Hunting 2000). The loss and degradation of grassland habitat and reductions in the prey base by factors such as conversion to agriculture, urbanization, forest invasion, and invasive exotic annuals, are implicated as the major long-term threats to this species (NatureServe Explorer 2002). Shooting, poisoning small mammals, and mining are also potential threats to this species and its habitat (Brown 1997).

**Designated Critical Habitat.** None.

**Conservation Efforts.** The California Partners in Flight program (Allen and Pitkin 2000) has prepared a Draft Grassland Bird Conservation Plan that describes grasslands in the Central Valley and focuses on seven focal grassland bird species

(including ferruginous hawk). This plan outlines the need to collect more information about the basic biology of these species to help design conservation recommendations. Dechant et al. (1999) and NatureServe Explorer (2002) provide management suggestions for the conservation of ferruginous hawks and their habitat.

**Recovery Plan and Recovery Guidance.** A recovery plan has not been prepared and recovery requirements have not been identified for this species.

**Research and Monitoring Gaps.** The current distribution, abundance, and wintering ecology of the ferruginous hawk in California is not well known (Hunting 2000). Studying winter habitat requirements, winter range, site fidelity, population limiting factors, foraging ecology, territory size, communal roost areas, and relationship with lagomorph abundance would help elucidate the ecology of this species in California (Hunting 2000). Monitoring communal roosting areas and surveying unfragmented grasslands and desertlands would also provide abundance and population trend data.

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## **GOLDEN EAGLE (*Aquila chrysaetos*)**

**Legal Status.** The golden eagle is designated as a species of special concern by the CDFG, and is a fully protected species under the California Fish and Game Code and Federal Bald and Golden Eagle Protection Act (CDFG 2003).

**Historical and Current Distribution and Status.** The golden eagle has historically and is currently found throughout most of western North America (Udvardy 1998). The golden eagle is a permanent resident throughout California, except in the center of the Central Valley, although it winters in this area (Zeiner et al. 1990). Golden eagle populations have declined near human population centers but, overall, its population appears stable (Remsen 1978).

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** The golden eagle nests in the Cottonwood Creek, North Sacramento Valley, Feather River/Sutter Basin, Eastside Delta Tributaries, West San Joaquin Basin, and Suisun Marsh/North

San Francisco Bay Ecological Zones. It could also nest in the Butte Basin, American River Basin, and East San Joaquin Basin Ecological Zones. This eagle winters in all of the ecological zones.

**Life History and Habitat Requirements.** The golden eagle generally inhabits open country, in prairies, arctic and alpine tundra, open wooded country, and barren areas, especially in hilly or mountainous regions (NatureServe Explorer 2001). This species avoids dense coastal and mountain coniferous forests (Small 1994). Golden eagles do not migrate, with the exception that some of the northernmost populations withdraw southward for winter, then return to northern breeding areas in March-April. The golden eagle tends to vacate hot deserts during summer.

The golden eagle breeds from late January through August, peaking from March through July. This eagle nests on cliffs and in large trees, primarily oaks in California, near open areas. Golden eagles often maintain alternative nest sites and old nests are frequently reused (Zeiner et al. 1990). Nests are built from sticks and range from three to eight feet across. A golden eagle typically lays 1-3 eggs, usually two. Siblicide is widely known in this species and more common among golden eagles than bald eagles. Generally, the larger eaglet will attack the smaller one eventually causing its death. This usually occurs when the young are under three weeks of age. The parents make no attempt to distribute food equally among the brood nor do they interfere when one nestling acts aggressively toward another. Eaglets are about 65 days old when they make their first flight.

The golden eagle needs open areas for hunting. Its diet consists mostly of lagomorphs and rodents, but also includes other mammals, reptiles, birds, and some carrion (Zeiner et al. 1990). They may also eat insects and juvenile ungulates. They rarely attack large, healthy mammals (e.g., pigs, sheep, deer) (Terres 1980). A positive correlation between breeding success and jackrabbit number was reported in Idaho, Colorado, and Utah.

**Reasons for Decline.** This species has declined near human population centers (Remsen 1978). The loss and alteration of grasslands, shooting, and human disturbance at nest sites have contributed to the decline of the species (Remsen 1978). The golden eagle is also extremely susceptible to power line electrocution because wings can span phase-to-phase or phase-to-ground wires (Biosystems Analysis 1989); modifications have been made in problem areas. Other threats include poison intended for coyotes and habitat loss to agriculture and suburban land uses.

**Designated Critical Habitat.** None.

**Conservation Efforts.** Measures under CALFED are designed to restore and enhance suitable habitat for this species (CALFED 2000).

**Recovery Plan and Recovery Guidance.** A recovery plan has not been prepared and recovery requirements have not been identified for this species.



**Research and Monitoring Gaps.** Disturbance by humans during the breeding season was found to be a major source of nest failure in other western states (Remsen 1978). Identifying possible sources of human disturbance around eagle nesting sites would help pinpoint human threats to populations.

### **Golden Eagle Citations**

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### **LARK SPARROW (*Chondestes grammacus*)**

**Legal Status.** The lark sparrow is listed as a California Special Animal (CDFG 2003) and a Migratory Nongame Bird of Management Concern (USFWS 1995). This species is considered a Federal Species of Concern (formerly a species under consideration for listing), but is not listed under the CESA (CDFG 2003).

**Historical and Current Distribution and Status.** The lark sparrow is a widely distributed species with breeding and wintering ranges that stretch from southern Canada to Mexico. This species is a long-range migrant, moving from breeding areas in Canada and most of the U.S. to wintering areas in the southwestern U.S. and Mexico (NatureServe Explorer 2002). Yearlong resident populations occur in Oregon, California, Idaho, Arizona, New Mexico, Texas, Baja California, and Mexico. In California, lark sparrows are typically present year round in lowland and foothill habitat, although they migrate from northern areas to southern deserts to breed (Granholm 1990). They are most common around the edge of the Central Valley in oak woodland habitats (Granholm 1990). Populations of lark sparrows throughout its range have declined 62 percent from 1966 to 1999 (NatureServe Explorer 2002).

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** The California Partners in Flight program has mapped two confirmed breeding areas for this species in the Bay-Delta bioregion and many confirmed and possible breeding areas in the Sacramento Valley bioregion (CalPIF 2001).

**Life History and Habitat Requirements.** Lark sparrows inhabit a variety of foothills habitats including sparse valley foothill hardwood, valley foothill hardwood-conifer, open mixed chaparral, and brushy habitats with sparse trees and shrubs (Granholm 1990). Other habitats include shortgrass, mixed-grass, and tallgrass prairie, parkland, sandhills, old fields, cultivated fields, and riparian areas (NatureServe Explorer 2002). The diet of lark sparrows consists of seeds, grains, and insects (e.g., grasshoppers), recovered from plants and ground litter. Plant foods predominate their diet in the fall and winter (NatureServe Explorer 2002). This species is gregarious, and may feed in flocks even during the breeding season. Sparrows seek cover and lookout perches among trees, small shrubs, fence posts, and large rocks (Granholm 1990).

The breeding season of the lark sparrow begins in April. Nests are generally built on the ground near the base of a shrub or grass tussock, in shrubs less than 2 meters from the ground, or occasionally in cliff crevices. Clutches are usually 3 to 6 eggs and young leave nest around 9 to 10 days. The life span of a lark sparrow is approximately 8 years (Klimkiewicz 2002).

**Reasons for Decline.** Populations are threatened by brood parasitism and use of pesticides for grasshopper and tick control (NatureServe Explorer 2002).

**Designated Critical Habitat.** None.

**Conservation Efforts.** Conservation efforts have not been identified for this species. NatureServe Explorer (2002) discusses conservation and restoration issues for this species. Conservation measures could include protecting and managing suitable open grassland habitat and avoiding land management activities during the breeding season.

**Recovery Plan and Recovery Guidance.** A recovery plan has not been prepared and recovery requirements have not been identified for this species.

**Research and Monitoring Gaps.** The current abundance and distribution of the lark sparrow in California is not well known and warrants study. Identifying possible causes for decline is important for the conservation of this species.

### **Lark Sparrow Citations**

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### **LOGGERHEAD SHRIKE (*Lanius ludovicianus*)**

**Legal Status.** The loggerhead shrike is listed as a CSC (CDFG 2002), a California Special Animal (CDFG 2003), a Sacramento Fish and Wildlife Office Species of Concern (Sacramento Fish and Wildlife Office 2003), a Bird of Conservation Concern (USFWS 2002), and a Migratory Nongame Bird of Management Concern (USFWS 1995). This species is considered a Federal Species of Concern (formerly a species under consideration for listing), but is not listed under the CESA (CDFG 2003). The subspecies *L.l. mearnsi*, of San Clemente is listed as a Federal Endangered Species (NatureServe Explorer 2002).

**Historical and Current Distribution and Status.** The loggerhead shrike frequents lowlands and foothills throughout California in the winter and often remains throughout the year. Shrike populations between the Great Basin and Inyo County depart from the area November through March. During the winter, this species is

more widespread than during the breeding season (Granholm 1990). The shrike may also be found breeding in eastern Washington, Oregon, across southern Canada and in several southern states. During the non-breeding season this species is found in central Washington, eastern Oregon, California, southern Nevada, northern Arizona, northern New Mexico, and other southern areas such as the Gulf Coast, southern Florida and Mexico. (NatureServe Explorer 2002).

Loggerhead shrike populations have remained consistent in the Pacific states (Granholm 1990). Populations across North America have declined since the 1960's, particularly in the northeastern and north central regions. Current suitable habitat for shrikes remain unoccupied, therefore the decline remains unexplained, however some possible reasons include pesticides, loss of wintering habitat quality and reforestation (NatureServe Explorer 2002).

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** The Loggerhead Shrike occurs in all 14 ecological zones and throughout the EWA Area of Analysis.

**Life History and Habitat Requirements** Most loggerhead shrikes are found in open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree habitats. Shrikes can be found in open areas with scattered shrubs, trees, posts, and utility lines, preferring perches on barbed wire fences or thorny plants suitable for impaling their prey. Shrikes commonly feed on large insects (e.g., beetles), invertebrates, small birds, mammals, amphibians, reptiles, fish, and carrion; usually foraging over areas of shorter vegetation.

Shrikes prefer to nest in shortgrass pastures with slight woodland cover and build their nests in tree crotches about 1.5 to 3 meters from the ground. In California, the breeding season generally extends from March into May, with the young leaving the nest after 18 to 19 days, and becoming independent in July or August. Eggs are laid at an interval of one per day, and clutch size averages 4 to 6 eggs.

**Reasons for Decline.** The reasons for decline of loggerhead shrikes are still somewhat unknown, although it is predicted that populations are threatened by pesticides, loss of habitat, and predation.

**Designated Critical Habitat.** None.

**Conservation Efforts.** Conservation efforts have not been identified for this species.

**Recovery Plan and Recovery Guidance.** A recovery plan has not been prepared and recovery requirements have not been identified for this species.

**Research and Monitoring Gaps.** Shrike population declines in North America still remain unexplained. Critical habitat features also need to be identified so recovery plans can be implemented.

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### LONG-EARED OWL (*Asio otus*)

**Legal Status.** The long-eared owl is designated as a species of special concern by the CDFG. This species is not listed under the CESA or FESA (CDFG 2003).

**Historical and Current Distribution and Status.** The long-eared owl breeds from southern and eastern British Columbia to northern Saskatchewan and Prince Edward Island, south to northwestern Baja California, southern New Mexico, northern Mexico, Arkansas, and Virginia. This species of owl winters from southern Canada to northern Baja California, central Mexico, and Gulf Coast.

The long-eared owl was once a common resident throughout California. Numbers have been declining since the 1940's, most severely in the Sacramento Valley, San

Joaquin Valley, and the San Diego area (Remsen 1978). The species is an uncommon breeder in the northeastern part of the state, in the Owens Valley, and the foothills east of the Central Valley. The long-eared owl winters in the Central Valley from Tehama County to Kern County (Zeiner et al. 1990).

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** The long-eared owl is a year-round resident in the Suisun Marsh/North San Francisco Bay Ecological Zone. This owl occurs as a breeding species in the foothills of the Butte Basin, Feather River/Sutter Basin, American River Basin, Eastside Delta Tributaries, and East San Joaquin Basin Ecological Zones. The long-eared owl winters in the Butte Basin, Feather River/Sutter Basin, American River Basin, Cottonwood Creek, Colusa Basin, Yolo Basin, Sacramento River, Eastside Delta Tributaries, Sacramento-San Joaquin Delta, West San Joaquin Basin, and East San Joaquin Basin Ecological Zones.

**Life History and Habitat Requirements.** Long-eared owls occur in riparian habitats as well as oak thickets and conifer forests at higher elevations (Zeiner et al. 1990). This species is also found in deciduous and evergreen forests, orchards, wooded parks, farm woodlots, river woods, and desert oases. Dense tree stands near open areas are required for hunting, and wooded areas with dense vegetation are needed for roosting and nesting (Small 1994). Nesting sites are usually old nests of crows, squirrels, hawks, magpies, or herons; sometimes in a tree cavity; rarely on the ground (Maples et al. 1995). The long-eared owl nests mainly from mid-March to mid-May in many areas and has a breeding season from early March to late July (Zeiner et al. 1990). High rodent numbers are essential for nesting success.

The long-eared owl is an opportunistic feeder that primarily feeds on small mammals. Voles, other rodents, shrews, and birds make up the majority of the long-eared owl's diet. Hunting areas vary with locality but the long-eared owl typically forages in open grassy area, e.g., marsh, old field, but may forage in forest in some areas (NatureServe Explorer 2001).

**Reasons for Decline.** Loss and fragmentation of riparian and oak woodlands have been major causes for the decline of this species (Zeiner et al. 1990). Harassment, shootings, and collision with cars can also have negative effects on local populations (Remsen 1978).

**Designated Critical Habitat.** None.

**Conservation Efforts.** Measures under CALFED ram are designed to restore and enhance suitable habitat for this species (CALFED 2000).

**Recovery Plan and Recovery Guidance.** A recovery plan has not been prepared and recovery requirements have not been identified for this species.

**Research and Monitoring Gaps.** Additional information is needed to identify the factors leading to population declines.

### Long-eared Owl Citations

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### MERLIN (*Falco columbarius*)

**Legal Status.** The merlin is listed as a CSC and California Special Animal (CDFG 2002, 2003). This falcon is not listed under FESA or CESA.

**Historical and Current Distribution and Status.** The merlin is a widely distributed species. The merlin's breeding range is from northern treeline in North America and Eurasia to Oregon, Idaho, South Dakota, New York, Maine, Nova Scotia, British Isles, and Russia. The wintering range is from southern British Columbia to Venezuela and Peru, as well as northern Africa and China (NatureServe Explorer 2002). In California, merlins can be present in the western half of the state, mostly concentrated along the coast and in the Central Valley (Polite 1990, CDFG 2002). This species does not breed in California and is an uncommon winter migrant from September to May (Polite 1990).

Merlin populations throughout the range declined drastically from the 1950's to 1970's mainly as a result of reproductive failure following pesticide use (NatureServe Explorer 2002). The merlin used to be a common winter visitor in California, but in the 1970s there were only 6 to 10 birds in southern California and 20 to 30 birds in northern California (CDFG 2002). The current abundance of this species in California is not known. Merlin populations outside California have shown increases in abundance in recent decades (NatureServe Explorer 2002).

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** The Merlin winters in 14 ecological zones and throughout the EWA Area of Analysis.

**Life History and Habitat Requirements.** Merlins hunt around a wide variety of habitats below elevations of 1500 meters, including open grasslands, savannahs, woodlands, lakes, marshes, deserts, lagoons, and along coastlines. They generally prefer open habitats at low elevation near both water and tree stands, such as lakeshores, coastlines, and wetlands (NatureServe Explorer 2002). These falcons feed on small birds, shore birds, small mammals, reptiles, toads and insects (Polite 1990). Merlins hunt during the day by flying at a low level and striking prey with a short dive from above. While merlins are not interspecifically territorial, they are intolerant of and drive away other accipiters (Polite 1990).

Merlins rely on dense tree stands close to bodies of water during the breeding season (Polite 1990). Nests are usually constructed of sticks, built in a conifer tree close to the water; nests have also been observed in cavities, cliffs, or within a crow, magpie, hawk or squirrel nest (NatureServe Explorer 2002). Eggs are laid from late May into June. Clutch sizes are typically 3 to 5 eggs and chicks leave the nest after 24 days. However, the chicks continue to depend on the parents for another 25 to 35 days (Polite 1990). Young merlins feed on insects such as dragonflies while sharpening their predatory skills. The average lifespan of a merlin is 12 years (Klimliewicz 2002).

**Reasons for Decline.** The reasons for drastic declines of the merlin in California have not been identified. The merlin in Canada experienced massive reproductive failure in the 1970s as a result of DDE contamination combined with falconry pressures (CDFG 2002). Habitat loss throughout its range and continued use of organochlorine biocides in Central and South America are also threats to the merlin (NatureServe Explorer 2002).

**Designated Critical Habitat.** None.

**Conservation Efforts.** Conservation efforts have not been identified for this species. CDFG (2002) and NatureServe Explorer (2002) provide management suggestions for the conservation of merlins and their habitat.

**Recovery Plan and Recovery Guidance.** A recovery plan has not been prepared and recovery requirements have not been identified for this species.

**Research and Monitoring Gaps.** The current distribution, abundance, and wintering ecology of the merlin in California are not well known and require study (CDFG 2002).

#### **Merlin Citations**

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## **MOUNTAIN PLOVER (*Charadrius montanus*)**

**Legal Status.** The mountain plover is designated as CSC and is proposed as threatened under the FESA (CDFG 2003).

**Historical and Current Distribution and Status.** The mountain plover is endemic to open, sparsely vegetated habitats in North America (CALFED 2000). The breeding range is the dry tablelands of the western Great Plains and the Colorado Plateau. The winter range extends from northern California (rarely) through southern California, southern Arizona, and central and coastal Texas to north-central Mexico (Cogswell 1977, Knopf 1996).

Mountain plovers do not breed in California, but approximately 70 percent of the continental population winters in the state. The major wintering areas in California are in the Sacramento, San Joaquin, and Imperial Valleys. Smaller numbers winter in the west Mojave Desert, San Jacinto Valley, Santa Maria Valley, Salinas Valley, the Carrizo Plain, Seal Beach, Tijuana River Valley, and the Lower Colorado River Valley.

In 1994, the North American population of the mountain plover was estimated to be 8,000-10,000 individuals. Small (1994) reported that numbers are declining in coastal California; in the interior, the species is declining and occurs only locally.

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** This species winters in the Colusa Basin, Yolo Basin, East San Joaquin Basin, and West San Joaquin Basin Ecological Zones. It could also occur in the Sacramento-San Joaquin Delta Ecological Zone (CALFED 2000).

**Life History and Habitat Requirements.** Mountain plovers nest in relatively high elevation (2,000 to 8,500 feet) short-grass prairies and plains (CALFED 2000). Dense and tall cover is avoided during all seasons and, unlike most other plovers, mountain

plovers are seldom found near water. The nest is a shallow depression in the ground, often lined with plant material. The clutch of (usually) three eggs is incubated for 28-31 days by both adults. The female may lay consecutive clutches in separate nests and each clutch is incubated by one of the adults. Breeding occurs in the Rocky Mountain States from Canada south to Mexico with most breeding birds occurring in Montana or Colorado.

After the breeding season (late March to early August), mountain plovers disperse across the southern and western Great Plains before migrating to their wintering areas. The migration of the species to and from California is more of an east-west movement than the typical north-south movement of migrating shorebirds in North America (CALFED 2000). In California, many of the preferred wintering sites are grazed by domestic livestock, or are within giant kangaroo rat precincts or California ground squirrel colonies (USFWS, 1999). Historically, the mountain plover has been reported from a variety of habitats during the wintering period, including grasslands and agricultural fields; however, more recently, mountain plovers are reported from natural, non-cultivated sites such as alkali sink scrub, valley sink scrub, alkali playa, and annual grasslands (USFWS, 1999)

In California, mountain plovers have been recorded rarely in late July, but most arrive in mid-October or later. Mid-November to early February is the period of peak abundance in California. Most birds are back on the breeding grounds by late March or early April (CALFED 2000).

**Reasons for Decline.** Threats to mountain plovers include natural predation, severe weather during the nesting/fledging period, direct persecution by humans, and loss and degradation of breeding and wintering habitat (Knopf 1996). Eggs and young preyed upon by ground squirrels, kit foxes, coyotes, badgers, skunks, and snakes. Adults are caught by raptors. Habitat degradation and destruction is the greatest threat to the species. In the early 1900's, large numbers of mountain plovers were reported in California on both grasslands and agricultural lands. At that time, California supported approximately 8,900,000 ha (22 million acres) of grasslands with about 20 percent occurring in the Central Valley (Moore et al 1990). Currently, grassland habitat has been nearly extirpated in the San Joaquin valley with less than 60,700 ha (150,000 acres) remaining. In the intervening period, conversion of grassland habitats to urban and agricultural uses proportionately exceeded conversion of any other habitat type (Ewing et al 1988, Moore et al 1990). As a consequence of this loss, native habitats used by the mountain plover have been reduced to less than four percent of their original abundance (CALPIF 2000).

Wintering mountain plovers in California are exposed to pesticides in agricultural fields, where they may spend up to 75 percent of the time, but there is no evidence that reproductive success or survival has been affected (Knopf 1996).

**Designated Critical Habitat.** None.

**Conservation Efforts.** Measures under CALFED are designed to restore and enhance suitable habitat for this species (CALFED 2000).

**Recovery Plan and Recovery Guidance.** A recovery plan has not been prepared and recovery requirements have not been identified for this species.

**Research and Monitoring Gaps.** Principle decline factors for the mountain plover include loss of habitat and indirect or direct effects of pesticide application (CalPIF 2001). Characterizing specific habitat needs would help ascertain key limiting factors for the distribution and abundance of this species. Additional studies on the effects of pesticide application are warranted.

### **Mountain Plover Citations**

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### **NORTHERN HARRIER (*Circus cyaneus*)**

**Legal Status.** The northern harrier is designated as a state species of special concern by the CDFG. This species is not listed under the CESA or FESA (CDFG 2003).

**Historical and Current Distribution and Status.** Northern harriers historically bred throughout California except in deserts, woodlands, and forested mountains. Breeding localities in California included the interior from Siskiyou County south to western Riverside and San Bernardino Counties and coastal regions from Marin County to San Diego County (Grinnell and Miller 1944).

Currently, two main populations of northern harriers exist: one at the Klamath Basin refuges and the other in the Sacramento-San Joaquin Delta. The breeding range of the northern harrier includes most of the Central Valley, Sacramento-San Joaquin Delta, Suisun Marsh, and portions of the San Francisco Bay (Zeiner et al. 1990).

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** The northern harrier's breeding and wintering range includes the Butte Basin, Colusa Basin, Feather River/Sutter Basin, American River Basin, Yolo Basin, Eastside Delta Tributaries, Sacramento-San Joaquin Delta, San Joaquin River, West San Joaquin Basin, and Suisun Marsh/North San Francisco Bay Ecological Zones. Its range could also include the East San Joaquin Basin Ecological Zone.

**Life History and Habitat Requirements.** The northern harrier uses tall grasses and forbs in wetlands and field borders for cover (Zeiner et al. 1990). The species' breeding season is between April and September, with peak activity in June and July. It roosts on the ground in shrubby vegetation, often near the marsh edge (Brown and Amadon 1968). Nests are built of a large mound of sticks on wet areas, and a smaller cup of grasses on dry sites. Northern harriers mostly nest in emergent wetland or along rivers or lakes, but may also nest in grasslands, grain fields, or on sagebrush flats several miles from water. Harrier nests in upland fields are predominately surrounded by grasses, and forbs, and harrier nests in wet sites are surrounded by marsh grasses and cattails (CalPIF, 2000). The northern harrier feeds mainly on voles and other small mammals, birds, small reptiles, crustaceans, and insects. It also feeds on fish, although this is rare.

Northern harriers winter throughout California where suitable habitat is found. Wintering habitat includes fresh and saltwater wetlands, coastal dunes, grasslands, deserts, meadows, and croplands. Harriers are rarely found in forested areas (CalPIF, 2000).

**Reasons for Decline.** North American populations have declined during the 20th century, with the major causes being the extensive draining of wetlands, implementation of monoculture farming, and reforestation of open farmlands (MacWhirter and Bildstein 1996). White (1994) considers this species of variable, but possibly decreasing, trends in western North America, citing habitat alterations (particularly wetlands loss) as the most important cause of possible declines.

**Designated Critical Habitat.** None.

**Conservation Efforts.** Measures under CALFED are designed to restore and enhance suitable habitat for this species (CALFED 2000).

**Recovery Plan and Recovery Guidance.** A recovery plan has not been prepared and recovery requirements have not been identified for this species.

**Research and Monitoring Gaps.** Further study is needed to determine if survival and reproduction of the harrier differ between disturbed and natural habitats (CalPIFD 2000).

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### **PRAIRIE FALCON (*Falco mexicanus*)**

**Legal Status.** The prairie falcon is listed as a CSC (CDFG 2002), a Special Animal (CDFG 2003), and a Bird of Conservation Concern (USFWS 2002). This species is not listed under the CESA or FESA.

**Historical and Current Distribution and Status.** The breeding range of this species is from southern Canada, and northern North Dakota south to Baja California, southern areas of New Mexico, Arizona, northern and western areas of Texas, and Mexico. Non-breeding ranges are southern Canada, south to Baja California and central Mexico, although falcons are most common in the Great Basin and central and central-southern latitudes of the Great Plains (NatureServe Explorer 2002). In California this species will be found in southeastern desert areas northwest along the inner Coast Ranges and Sierra Nevada. Falcons are not typically found in the northern coastal fog belt or coastline (Polite 1990).

Pesticides have historically caused declines in falcon populations, specifically organochlorine contaminants and mercury. Current pesticide restrictions have

allowed populations to recover, but populations that live near areas of heavy agricultural use still suffer from low reproduction (Tesky 1994). Falcons have also been negatively affected by declines in squirrel populations (NatureServe Explorer 2002). Surveys conducted around the perimeter of the Central Valley in 1969-1972 showed low reproduction rates due to high percentages of non-reproductive pairs, however populations appear to be recovering and nearing carrying capacity in California (Remsen 1978).

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** The Prairie Falcon occurs in all 14 ecological zones and throughout the EWA Area of Analysis.

**Life History and Habitat Requirements.** Prairie falcons rely on large expanses of short vegetation, including annual grasslands, alpine meadows, savannahs, rangeland, desert scrub areas, and agricultural fields. Falcons catch their prey in midair, or dive from a high perch, feeding around sunrise and sunset hours on small mammals, insects, birds, reptiles, and amphibians. Specific prey in western shrubsteppe areas are jackrabbits but also include ground squirrels and pocket gophers (NatureServe Explorer 2002).

Nests are found in canyons, cliffs and rock outcrops with direct access to open fields for hunting and foraging. Falcons may also use old eagle, raven or hawk nests constructed of sticks (NatureServe Explorer 2002). Falcons breed from mid-February through mid-September with peaks from April to early August (Polite 1990). Clutch sizes tend to be 3 to 6 eggs and young become independent after 29 to 33 days. Falcons and their nestlings are preyed upon by hawks, eagles, owls, coyotes, and bobcats.

**Reasons for Decline.** Loss of breeding habitat for falcons is probably the most important cause of population decline. Populations are sensitive to human disturbance and will abandon nests if they feel threatened. Alteration of prey habitat by cultivation, water impoundments, or heavy grazing also affect populations. Despite pesticide regulations, agricultural chemicals still threaten species reproduction (Tesky 1994).

**Designated Critical Habitat.** None.

**Conservation Efforts.** Conservation efforts have not been identified for this species. CDFG (2002) and NatureServe Explorer (2002) provide management suggestions for the conservation of prairie falcons and their habitat.

**Recovery Plan and Recovery Guidance.** A recovery plan has not been prepared and recovery requirements have not been identified for this species.

**Research and Monitoring Gaps.** Research and monitoring gaps for this species have not been identified.

## Prairie Falcon Citations

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## SHORT-EARED OWL (*Asio flammeus*)

**Legal Status.** The short-eared owl is designated as a species of special concern by the CDFG and as a migratory nongame bird of management concern by the USFWS. This species is not listed under the CESA or FESA (CDFG 2003).

**Historical and Current Distribution and Status.** The short-eared owl historically bred throughout California, west of the deserts (Grinnell and Miller 1944). This species has declined dramatically throughout the state. It is more numerous in winter, concentrating in areas with little snow cover and abundant prey, but even winter numbers have declined (Remsen 1978). Breeding populations have been extirpated from the southern coast and from the San Joaquin Valley (Remsen 1978). The species still breeds in the southern portion of the Sacramento Valley (Yolo and Solano Counties), the Sacramento-San Joaquin Delta, Suisun Marsh, northeastern portion of the state, in the Coast Ranges from Sonoma to Santa Barbara Counties, and in the Owens Valley (Small 1994, Zeiner et al. 1990).

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** The short-eared owl breeds in the Suisun Marsh/North San Francisco Bay and Yolo Basin Ecological Zones but it could also breed in the Sacramento-San Joaquin Delta Ecological Zone. It winters in the Colusa Basin, Butte Basin, Feather River/Sutter

Basin, Yolo Basin, American River Basin, Eastside Delta Tributaries, Sacramento-San Joaquin Delta, East San Joaquin Basin, West San Joaquin Basin, and Suisun Marsh/North San Francisco Bay Ecological Zones.

**Life History and Habitat Requirements.** The short-eared owl is a migrating species and a resident in California (Zeiner et al. 1990). Short-eared owls are more numerous in winter, with migrating birds arriving in September and October and leaving in April (Zeiner et al. 1990). This owl requires dense vegetation for roosting and resting cover. Habitat types frequently mentioned as suitable include fresh and saltwater marshes, bogs, dunes, prairies, grassy plains, old fields, tundra, moorlands, river valleys, meadows, savanna, open woodland, and heathland (NatureServe Explorer 2001). Open, treeless areas containing elevated sites for perching are also needed. In general, any area that is large enough, has low vegetation with some dry upland for nesting, and that supports suitable prey may be considered potential breeding habitat. Nearby water may also be a requirement for nesting habitat (Nature Serve Explorer, 2001). Nests are built on the ground in tall stands of grasses in lowland habitats near hunting grounds in marshes, meadows, and even agricultural fields (Grinnell and Miller 1944). The breeding season is from late March to July (Zeiner et al. 1990).

The short-eared owl feeds primarily on voles and other small mammals, but also eats reptiles, amphibians, and arthropods. They frequently search in low, gliding flights, 1-6 m (3.3 to 20 ft) above the ground from which they swoop and pounce to capture prey. Short-eared owls also hunt from perches. The short-eared owl is commonly found in treeless areas, therefore often uses fence posts and small mounds as perches (CDFG 2002).

**Reasons for Decline.** The destruction of breeding and foraging habitat has been the primary cause for the decline of the short-eared owl. In many parts of their range declines are due to destruction and degradation of marshes, grasslands, and low-use pastures (NatureServe Explorer 2001). This may be a result of development, changing land-use patterns (e.g., farmlands to woodlands, or to development), changing farming practices (e.g., hay fields to row crops), reforestation, wetland loss, or a combination of these factors. Loss of open grasslands to later successional stages of community development reduces available hunting and breeding habitat. In areas where necessary habitats are still in tact, grazing and shooting have led to the further decline of this species (Remsen 1978).

As a ground-nesting bird, short-eared owl eggs and young may fall prey to various mammalian ground predators such as foxes, raccoons, and mustelids (NatureServe Explorer, 2001).

**Designated Critical Habitat.** None.

**Conservation Efforts.** Measures under CALFED are designed to restore and enhance suitable habitat for this species (CALFED 2000).

**Recovery Plan and Recovery Guidance.** A recovery plan has not been prepared and recovery requirements have not been identified for this species.



**Research and Monitoring Gaps.** The current status and abundance of this species in California is not well known.

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#### **SWAINSON'S HAWK (*Buteo swainsoni*)**

**Legal Status.** The Swainson's hawk is listed as threatened under the CESA and is considered a Federal Species of Concern (formerly a species under consideration for listing) (CDFG 2003).

**Historical and Current Distribution and Status.** The Swainson's hawk's breeding range is from southwestern Canada to northern Mexico (Godfrey 1986, Semenchuk 1992, Howell and Webb 1995, Smith 1996, England et al. 1997). Nearly all North American populations of Swainson's hawks winter in South America and Mexico; however, some small populations regularly winter in southern Florida (Stevenson and Anderson 1994) and in the Sacramento-San Joaquin Delta of central California (Yee et al. 1991, Herzog 1996).

Historically, the Swainson's hawk's breeding range in California included the Great Basin; the Sacramento and San Joaquin Valleys; along the coast in Marin, Monterey, Ventura, Los Angeles, and San Diego Counties; along Catalina Island; and a few scattered sites in the Colorado and Mojave Deserts (Bloom 1980). Today, Swainson's hawks nest in some previously occupied regions of the state, but the number of breeding birds has been greatly reduced throughout major portions of the species' range and the species has been extirpated in coastal central and southern California (Bloom 1980, CDFG 1994). Approximately 30 birds have wintered in the Sacramento-San Joaquin Delta annually since 1991 and are the only confirmed regularly wintering population in California (Yee et al. 1991, Herzog 1996).

Bloom (1980) estimated that the breeding population of Swainson's hawks in California had declined by over 90 percent from historical times and estimated the current number at about 400 pairs statewide. A statewide survey conducted in 1988 found 320 active territories; approximately 241 were in the Central Valley and 78 were in the Great Basin in northeastern California (CDFG 1988). Additional surveys done in California during the 1990s indicate that the total statewide population estimate is 500-1,000 breeding pairs, with a likely average of about 700 pairs; 80 percent of which are in the Central Valley, with Yolo, San Joaquin, and Sacramento Counties being the most important nesting areas that remain in the state (CDFG 1994).

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** Swainson's hawks are a breeding species in the Sacramento River, North Sacramento Valley, Cottonwood Creek, Butte Basin, Feather River/Sutter Basin, American River Basin, Yolo Basin, San Joaquin River, Eastside Delta Tributaries, Sacramento-San Joaquin Delta, East San Joaquin Basin, West San Joaquin Basin, and the eastern portion of the Suisun Marsh/North San Francisco Bay Ecological Zones.

**Life History and Habitat Requirements.** Swainson's hawks migrate long distances, are highly gregarious, and are largely insectivorous during migration. During the breeding season, small mammals are the primary prey items (Estep 1989). Their annual round-trip migration between North America and Argentina covers approximately 12,500 miles (England et al. 1997). Recent studies using satellite telemetry indicate that parts of Mexico may constitute the primary wintering range of birds breeding in the Central Valley. Birds typically return to nest sites in California from early March to April (later in more northern areas of the state). Migratory flocks begin to form in late August and September and most birds are on the wintering grounds by November (Bradbury unpubl. data).

The natural foraging habitat of Swainson's hawks throughout the majority of their North American range in the Great Basin, plains states, and prairie provinces of Canada is relatively open stands of grass-dominated vegetation and relatively sparse shrub lands. Swainson's hawks can forage in many crops, and Schmutz (1987) found that the species is more abundant in areas of moderate cultivation than in either grassland or areas of extensive cultivation. Alfalfa is routinely used by foraging Swainson's hawks (Estep 1989, Woodbridge 1991), but the ability of the hawk to use cultivated lands for foraging is a complex interaction of crop phenology and cultural practices (Schmutz 1987, Estep 1989, Woodbridge 1991). Orchards and vineyards, in

general, are not suitable foraging habitat for Swainson's hawks because of the dense woody cover, and rice is unsuitable most of the season because it is flooded (Estep 1989).

Throughout its range, the Swainson's hawk nests almost exclusively in only a few species of trees (Schlorff and Bloom 1983). A survey of nesting birds in California during 1979 revealed that Swainson's hawks nested in large, sparsely vegetated flatlands characterized by valleys, plateaus, broad floodplains, and large expanses of desert (Bloom 1980). In a study of movements and habitat use, it was found that single trees or riparian areas were used most often for nesting (Estep 1989).

**Reasons for Decline.** Several hypotheses have been suggested to explain the decline of Swainson's hawks in California: (1) mortality during migration and on the wintering grounds in South America; (2) poisoning by toxic chemicals, including pesticides, in South America; (3) thin eggshells resulting from pesticides; (4) habitat loss on wintering grounds; (5) disturbance on breeding grounds; (6) loss or degradation of habitat on breeding grounds; and (7) increased competition with other species.

**Designated Critical Habitat.** None.

**Conservation Efforts.** A group of researchers has formed a Swainson's hawk Technical Advisory Committee (TAC) to help develop a draft recovery plan for the species. CDFG has developed GIS tools to aid in management for this species (CDFG 2002). Measures under CALFED are designed to restore and enhance suitable habitat for this species (CALFED 2000).

**Recovery Plan and Recovery Guidance.** A recovery plan has not been prepared but several CDFG studies identify sufficient essential habitat requirements to constitute a basis for recovery actions. These data have formed the factual foundation for several planning documents and habitat conservation efforts.

**Research and Monitoring Gaps.** It does not appear that there are research and monitoring gaps for this species.

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## **WESTERN BURROWING OWL (*Athene cunicularia*)**

**Legal Status.** The western burrowing owl is designated as a species of special concern by the CDFG. This species is not listed under the CESA, and is considered a Federal Species of Concern (formerly a species under consideration for listing) (CDFG 2003).

**Historic and Current Distribution and Status.** The western burrowing owl maintains breeding populations from south-central British Columbia, southern Alberta, southern Saskatchewan, southern Manitoba south through the western U.S. and central Mexico to Panama (AOU 1983, Haug et al. 1993). During the winter the northernmost populations of the western burrowing owl can be found as far south as El Salvador and western Panama (AOU 1983). California, New Mexico, and Arizona are important wintering areas in the U.S. (James and Ethier 1989) (NatureServe Explorer 2001).

The burrowing owl is a permanent resident throughout most of California. This species was historically more abundant, but since the 1940's, numbers have been declining in all areas. Although it is still locally common in the southeastern deserts, around agricultural fields, and along canal and ditch banks. State and Federal lands appear to be the last stronghold for this species (Remsen 1978).

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** The burrowing owl is a year-round species in the Butte Basin, Colusa Basin, Yolo Basin, Feather River/Sutter Basin, American River Basin, Eastside Delta Tributaries, East San Joaquin Basin, West San Joaquin Basin, and Suisun Marsh/North San Francisco Bay Ecological Zones.

**Life History and Habitat Requirements.** The burrowing owl is found in open grasslands, especially prairies, plains, and savannas. Occasionally it can be found in agricultural fields, desert habitats, seacoast bluffs, and open areas such as vacant lots near human habitation (e.g., campuses, airports, golf courses, perimeter of agricultural fields, banks of irrigation canals) (Small 1994). Optimum habitat is typified by short vegetation and the presence of fresh small mammal burrows (Zarn 1974). Burrowing owls spend a large amount of time on the ground or on low perches such as fence posts or dirt mounds.

Burrowing owls breed from March to August, peaking in April and May. This species nests in abandoned ground squirrel and other small mammal burrows (Zeiner et al. 1990). They rarely excavate their own burrows, preferring instead to enlarge or modify an existing burrow. Patterns of burrow use are influenced by availability, soils, prairie dog population dynamics, and other owls (Desmond and Savidge 1998, NatureServe Explorer 2001). Weather plays a strong and unpredictable role in abundance and availability of small mammal prey, which in turn can limit reproductive success (Wellicome 1998).

Burrowing owls feed on a variety of prey, but Conroy and Chesmore (1987) found that insects and mammals make up the majority of their diet, although they will also feed on arachnids, amphibians, and reptiles. Owls concentrate nocturnal foraging efforts in areas with high small mammal abundance, which accounts for the bulk of

their caloric intake (Wellicome 1997b). They catch their prey in flight or drop to the ground (NatureServe Explorer 2001).

**Reasons for Decline.** The greatest threat to the burrowing owl is the conversion of grassland habitat for agricultural and urban uses. Other causes that have contributed to the decline of this species include pesticide use in nesting areas, rodent-control programs, and habitat fragmentation (Remsen 1978).

**Designated Critical Habitat.** None.

**Conservation Efforts.** The Burrowing Owl Research Program is an interagency effort to survey and research this species (IBP 2002). Measures under CALFED are designed to restore and enhance suitable habitat for this species (CALFED 2000).

**Recovery Plan and Recovery Guidance.** A recovery plan has not been prepared and recovery requirements have not been identified for this species.

**Research and Monitoring Gaps.** Research on the demography, vital rates, and dispersal of this species will help understand factors affecting the reproduction and survival of burrowing owls. Additional research should focus on the effect of habitat features on home range size and shape (IBP 2002).

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## **WHITE-TAILED KITE (*Elanus leucurus*)**

**Legal Status.** The white-tailed kite is a fully protected species under the California Fish and Game Code and is considered a Federal Species of Concern (formerly a species under consideration for listing) (CDFG 2003).

**Historical and Current Distribution and Status.** White-tailed kite populations have fluctuated greatly over the past century. Grinnell and Miller (1944) stated that this species was common and widespread in valley and foothill territories before 1895 but, by the 1940's, it was rare or entirely gone from many areas. From the 1940's through

the 1970's, kite populations have increased and their range has extended north into Oregon, south into Central America, and east into Texas (Shuford 1993).

White-tailed kites have steadily decreased throughout much of California since the late 1970's. Declines have been especially evident in southern California (Garrett and Dunn 1981), along the south coast (Marantz 1986), and in the San Joaquin Valley (Small 1994). Local populations appear to still be relatively healthy along the north and east San Francisco Bay and in the Sacramento-San Joaquin Delta.

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** The white-tailed kite nests in all 14 ecological zones.

**Life History and Habitat Requirements.** White-tailed kites inhabit open lowland grassland, riparian woodland, marshes, and scrub areas; foraging in undisturbed, open grasslands, meadows, farmlands and emergent wetlands. Kites do not seem to associate with particular plant species, but are more tied to prey abundance and vegetation structure (CalPIF 2000). They typically soar, glide, and hover less than 30 m (100 ft) above ground in search of prey (Zeiner et. al. 1990). White-tailed kite prey consists mostly of voles and other small, diurnal mammals; occasionally including birds, insects, reptiles, and amphibians. Habitats supporting larger prey populations, such as ungrazed lands versus grazed lands, are more suitable. Alfalfa and sugar beets support the highest vole populations, relative to other agriculture (CalPIF 2000).

White-tailed kites breed in lowland grasslands, agriculture lands, wetlands, oak-woodland, savannah, and riparian habitats associated with open foraging areas. White-tailed kites make their nest with loosely piled sticks and twigs, lining them with grass, straw, or rootlets. Nests are placed near the top of dense oak, willow, or other tree stands; usually 6-20 m (20-100 ft) above ground near open foraging areas (Zeiner et. al. 1990). Nest building occurs January through August, and egg laying begins in February, probably peaking in March and April. Fledging probably occurs in May and June with most fledging complete by October (CalPIF, 2000).

**Reasons for Decline.** Declines during the early part of the century were probably the result of habitat loss, shooting (this kite was considered a pest species), and, to a much lesser extent, egg collecting (Shuford 1993). In the past 20 years, habitat loss has been accelerated, including conversion of agricultural lands to urban/residential; however, declines have occurred even in areas such as Santa Barbara County, where agricultural lands have experienced little conversion. Kite populations also fluctuate greatly with cycles of prey abundance, which, in turn, are significantly correlated with rainfall (Pruett-Jones et al. 1980). Such cycles result in natural bottlenecks when the species may be extremely vulnerable to human disturbance. These fluctuations make determination of long-term population trends difficult.

The most important threat still facing this species is loss of habitat. Although kites appear able to withstand some habitat alteration because of grazing and farming, large stretches of agricultural areas devoid of natural vegetation and urbanized areas are not suitable habitat.



**Designated Critical Habitat.** None.

**Conservation Efforts.** Measures under CALFED are designed to restore and enhance suitable habitat for this species (CALFED 2000).

**Recovery Plan and Recovery Guidance.** A recovery plan has not been prepared and recovery requirements have not been identified for this species.

**Research and Monitoring Gaps.** The white-tailed kite might compete for nesting sites with other raptors. Research into these interactions would help identify possible limiting factors for the kite. Additionally, information about current abundance and population trends for this species is warranted (CalPIF 2000).

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## **WESTERN SPADEFOOT TOAD (*Scaphiopus hammondi*)**

**Legal Status.** The western spadefoot toad is designated as a species of special concern by the CDFG. It has also been identified by CALFED as a species of concern. This species is not listed under the CESA or FESA (CDFG 2003).

**Historical and Current Distribution and Status.** The western spadefoot toad occurs in much of California west of the Sierra Nevada from Redding south to Mexico (Jennings and Hayes 1994). Serious population reductions have occurred throughout its range. More than 80 percent of its habitat in southern California has been developed or altered and more than 30 percent of its habitat in the Central Valley has been converted such that it is unusable (Jennings and Hayes 1994).

**Distribution in the CALFED Solution Area and EWA Area of Analysis.** The western spadefoot toad is present in the North Sacramento Valley, Cottonwood Creek, Butte Basin, Colusa Basin, Feather River/Sutter Basin, American River Basin, Yolo Basin, Eastside Delta Tributaries, San Joaquin River, East San Joaquin Basin, and West San Joaquin Basin Ecological Zones.

**Life History and Habitat Requirements.** The western spadefoot toad occupies a wide range of habitats; lowlands to foothills; grasslands, open chaparral, and pine-oak woodlands. However, this species prefers shortgrass plains and sandy or gravelly soil (e.g., alkali flats, washes, alluvial fans). Spadefoot toads are numerous where soil conditions are favorable for burrowing (Behler & King, 1996).

Intermittent pools of water, irrigation canals, reservoirs, edges of streams, and rain pools are frequented for breeding (Stebbins, 1951). Pools must last more than three weeks to allow for successful metamorphosis (Jenning and Hayes 1994). As pools dry, adults dig down into the soil and create a burrow where they estivate for most of the year (Zeiner et al. 1988). Eggs, consisting of 300-500 eggs per female (Stebbins, 1954), are laid in cylindrical masses attached to vegetation. Eggs can hatch in two to seven days. The development of larva is rapid and frequently speeds up with the evaporation of water, the concentration of chemicals in water, increases in temperature, or other factors (Stebbins, 1954). The larval period ranges from 25 days to 51 days.

Adults feed on most types of insects and other invertebrates; larvae are carnivorous and feed on dead amphibians, even their own species, as well as plankton and algae (Zeiner et al. 1988). Tadpoles are carnivores and feed on mosquito larvae.

**Reasons for Decline.** Loss of suitable habitat to development and agriculture is the primary reason for western spadefoot toad decline. Other factors include the introduction of mosquitofish and bullfrogs, which eat larvae and metamorphs, vulnerability to pesticides, atmospheric pollution, and human predation (Jennings and Hayes 1994, Beebee, 1996). Since the 1950's, drastic declines have been noted in the Central Valley and southern California. In southern California, more than 80 percent of the previously occupied habitat has been developed or converted to incompatible uses; in northern and central California more than 30 percent has been converted or developed (Jennings and Hayes 1994, NatureServe Explorer 2001).

**Designated Critical Habitat.** None.

**Conservation Efforts.** Measures under CALFED are designed to restore and enhance suitable habitat for this species (CALFED 2000).

**Recovery Plan and Recovery Guidance.** A recovery plan has not been prepared and recovery requirements have not been identified for this species.

**Research and Monitoring Gaps.** Significant gaps exist in understanding basic life history traits such as longevity and movements; identifying suitable habitat features; identifying habitat fragmentation effects on metapopulation structure; and identifying factors affecting long-term survival structure (Jennings and Hayes 1994).

#### **Western Spadefoot Toad Citations**

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## INLAND DUNE SCRUB COMMUNITY

**Description:** Inland dune scrub habitat comprises vegetated stabilized sand dunes associated with river and estuarine systems (MSCS 2000). This habitat is home to numerous rare and endangered endemic species such as the Antioch Dunes evening primrose and Lange's metalmark butterfly.

**Historical and Current Distribution and Status:** Historic dunes within the Delta may have covered 15,560 acres based on soil surveys (ERPP 2000). Existing remaining habitat areas are protected such as the Antioch Dunes National Wildlife Refuge and Brannan Island State Park.

Major factors that limit this habitat's contribution to the health of the Delta are related to adverse effects of sand mining, dune conversion to other land uses, dune stabilization, and land use practices that maintain the dominance of non-native plants (ERPP 2000).

**Relationship to EWA Area of Analysis:** Inland dune scrub is in restricted areas of the Delta in the Antioch Dunes National Wildlife Refuge.

**CALFED NCCP Community Goal:** The goal is to enhance 50–100 acres of inland dune scrub habitat in the CALFED Delta Region to increase the population of associated evaluated species. Additionally the goal is to avoid, minimize, and compensate for all CALFED effects on inland dune scrub habitat.

## GRASSLAND

**Description:** Grassland habitat includes upland vegetation communities dominated by introduced and native annual and perennial grasses and forbs, including nonirrigated and irrigated pasturelands (MSCS 2000). Grasslands in California are dominated by wild oats, soft chess, brome, ryegrass, mustard, foxtail, California oatgrass, hairgrass, sweet vernal grass, and barley. Common forbs include filaree, clover, popcorn flower, and mullein. Grassland wildlife include western fence lizard, common garter snake, western rattlesnake, black-tailed jackrabbit, California ground squirrel, Botta's pocket gopher, harvest mouse, California vole, badger, and coyote. Bird species include western

meadowlark, turkey vulture, and American kestrel. Special-status species include valley elderberry longhorn beetle, recurved larkspur, palmate-bracted bird's-beak, San Joaquin kit fox, western burrowing owl, short-eared owl, horned lark, northern harrier, white-tailed kite, and prairie falcon.

**Historical and Current Distribution and Status:** Perennial grassland was historically common throughout the Central Valley. Most perennial grassland has been lost or converted into annual grassland. Perennial grasslands and associated vernal pools historically were present at drier, higher elevations in the Delta. Grasslands developed adjacent to wetland and riparian habitats that occupied wetter, lower elevation. Much of the perennial grasslands have been converted for other uses. Non-native annual grasses now dominate most remaining grasslands. Annual grasses out competed and replaced perennial bunch grasses over most of the Central Valley (ERPP 2000).

Extent and health of perennial grasslands in the Bay-Delta estuary are declining. Large areas of historic perennial grassland have been converted for agriculture, urban, and industrial uses. Remaining grasslands have been invaded by non-native annual grass. Many of the annual grass species out-compete native grasses. Fire-resistant, non-native species have been given an additional competitive edge from current fire suppression techniques (ERPP 2000).

**Relationship to EWA Area of Analysis:** Grassland vegetation can be found surrounding Lake Shasta, Keswick Reservoir, Folsom Lake, Lakes McClure and McSwain, and San Luis Reservoir.

**CALFED NCCP Community Goal:** The goal is to (1) restore 9,000–11,000 acres of perennial grassland in the CALFED Bay and Delta Regions; (2) enhance grassland adjacent to wetlands and in the CALFED Sacramento River Region; and (3) replace the habitat functions and values lost for evaluated species as a result of effects on grassland habitat.

## UPLAND SCRUB

**Description:** Upland scrub habitat includes habitat areas dominated by shrubs characteristic of coastal scrub, chaparral, and saltbush scrub communities (MSCS 2000). Upland scrub habitat is dominated by several types of vegetation including, ceanothus, manzanita, bitter cherry, oaks, poison oak, coffee berry, buckbrush, California buckeye, toyon, sugar sumac, chamise, saltbush, sagebrush, and creosote bush. Wildlife species found in upland scrub habitats include brush rabbit, black-tailed jackrabbit, mule deer, rufous-sided towhee, California quail, California thrasher, red-tailed hawk, prairie falcon, and Cooper's hawk.

**Historical and Current Distribution and Status:** Montane chaparral is associated with mountainous terrain from mid to high elevation at 3,000 – 9,000 feet. It occurs in southern California above 7,000 feet in the Transverse Range of Los Angeles,

and in San Bernadino, Riverside and San Diego Counties; from Siskiyou to Kern counties in the Cascade and Sierra Nevada mountains; as a minor type from Tehama to Lake Counties; and in Del Norte, Siskiyou, Trinity, and Shasta counties in the North Coast Ranges and Klamath mountains. As a successional stage following disturbance, its distribution coincides with the ponderosa pine and mixed coniferous forest habitat types (CDFG 2003).

Mixed chaparral generally occurs below 5,000 feet on mountain ranges throughout California except in the deserts. Upper and lower elevational limits vary considerably with precipitation regime, aspect, and soil type. Mixed chaparral occurs throughout the transverse, peninsular, and central coast ranges and the Tehachapi Mountains. In the Sierra Nevada, this type is a broken band along middle and lower elevations of the western slope. It also occupies large areas in the north coast ranges, especially on the interior slopes, and is found as large discontinuous patches in the Siskiyou Mountains and Cascade and Klamath ranges (CDFG 2003).

Chamise-Redshank chaparral is usually found below 4,000 feet on mountain ranges outside the desert. In the north, chamise more frequently mixes with other shrubs, especially several species of ceanothus. This type of vegetation covers large areas in the central coast ranges and on the eastern exposures of the north coast ranges; as isolated stands in the Cascade and Klamath ranges and the Siskiyou Mountains; and in a broken band on the western slope of the Sierra Nevada (CDFG 2003).

Alkali scrub vegetation occurs in California throughout the Mojave Desert, parts of the Colorado Desert, parts of northeastern California within the Great Basin, and in the southern San Joaquin Valley. Examples of the halophytic phase of alkali scrub are common in California deserts, but are scattered and usually associated with dry lakes and flood plains of rivers such as the Mojave, Colorado, and Amargosa. Alkali scrub phases occur from below sea level in Death Valley to over 5,900 feet in some Great Basin locations (CDFG 2003).

**Relationship to EWA Area of Analysis:** Upland scrub habitat can be found immediately above the drawdown zones of Lake Shasta, Keswick Reservoir, Lake Oroville, New Bullards Bar Reservoir, Folsom Lake, Lakes McClure and McSwain, Castaic Lake, Silverwood Lake, Lake Perris, Lake Mathews, and Diamond Valley Lake.

**CALFED NCCP Community Goal:** The goal is to replace the habitat functions lost for evaluated species as a result of effects on upland scrub habitat.

## **VALLEY/FOOTHILL WOODLAND AND FOREST**

**Description:** Valley/foothill woodland and forest habitat includes nonriparian forest, woodland, and savanna of valleys and foothills. These vegetation communities are commonly dominated by valley oak, blue oak, interior live oak,

coast live oak, and foothill pine (MSCS 2000). Additionally valley/foothill woodland and forest habitat is often dominated by sycamore, black walnut, juniper, and California buckeye. Wildlife associated with valley/foothill woodland and forest include acorn woodpecker, northern flicker, wild turkey, plain titmouse, black-tailed jackrabbit, American crow, California quail, Bewick's wren, western fence lizard, coyote, mule deer, California ground squirrel, western gray squirrel, and scrub jay.

**Historical and Current Distribution and Status:** Blue Oak woodlands occur along the western foothills of the Sierra Nevada-Cascade Ranges, the Tehachapi Mountains, and in the eastern foothills of the Coast Range, forming a nearly continuous ring around the Central Valley. The habitat is discontinuous in the valleys and on lower slopes of the interior and western foothills of the Coast Range from Mendocino County to Ventura County. It is generally found at elevations from 500 to 2,000 feet at the northern end of its range and on the western slopes of the Sierra Nevada, from 250 to 3,000 feet in the central Coast Range, and from 550 to 4,500 feet in the Transverse and Peninsular Ranges (CDFG 2003).

Blue Oak-Digger Pine habitat generally rings the foothills of the Central Valley, between 500 and 3,000 feet in elevation. The Pit River drainage in the Cascade Range and the foothills of the Klamath Mountains mark the approximate northern limit. The habitat is nearly continuous in the western foothills of the Sierra Nevada, except for a gap of 60 miles between Kings and Kern Rivers, where digger pine is missing. The distribution extends south in to the Liebre Mountains of northern Los Angeles County and the drainages of Piru Creek and Santa Clara River in Ventura County. It is discontinuous in the Coast Range west of the Central Valley from Ventura to Mendocino Counties. And it extends westward to within 10 miles of the coast in a few places (CDFG 2003).

Remnant patches of Valley Oak woodland are found in the Sacramento Valley from Redding south, in the San Joaquin Valley to the Sierra Nevada foothills, in the Tehachapi Mountains, and in valleys of the Coast Range from Lake County to western Los Angeles County. Usually it occurs below 2,000 feet, although a reported ridge-top stand at 5,000 feet in the Santa Lucia Mountains exists (CDFG 2003).

**Relationship to EWA Area of Analysis:** Valley/foothill woodland forest can be found immediately above the drawdown zones of Lake Oroville, Folsom Lake, Lake McClure, Lake McSwain and San Luis Reservoir; and often immediately adjacent to the Valley/Foothill riparian corridor along the Sacramento, San Joaquin, Feather, Yuba, American, and Merced rivers.

**CALFED NCCP Community Goal:** The goal is to replace the habitat functions lost as a result of effects on valley/foothill woodland and forest habitat.

## MONTANE WOODLAND AND FOREST

**Description:** Montane woodland and forest habitat includes nonriparian forest and woodland above the foothills. These vegetation communities are commonly dominated by pine, fir, cedar, and black oak (MSCS 2000). More specifically montane woodland and forest vegetation is dominated by white fir, Douglas fir, ponderosa pine, Jeffery pine, red fir, lodgepole pine, sugar pine, live oak, tanoak, incense cedar, coulter pine, willows, alders, black cottonwood, aspens, black oak, and knobcone pine.

**Historical and Current Distribution and Status:** The Sierran mixed conifer habitat generally forms a vegetation band ranging 2,500 to 4,000 feet in the north to 4,000 to 10,000 feet in the southern Sierra Nevada. The Sierra Nevada mixed conifer forest occupies between 4.5 to 7.8 million acres in southern Oregon and California, dominating western middle elevation slopes of the Sierra Nevada. Disjunct populations of mixed conifer are founding the Peninsular, Transverse, and Coast ranges of California (CDFG 2003).

Douglas-fir habitat occurs in the north Coast Range from Sonoma County north to the Oregon border and in the Klamath Mountains of California and Oregon. This habitat usually occurs at elevations from 500 to 2,000 feet in the Coast Range and from 1,000 to 4,000 feet in the Klamath Mountains. It can occur at higher elevations if plentiful precipitation is present (CDFG 2003).

Most aspen habitats in California are found within 50 miles of the Nevada border from Mono County to Plumas County. Small stands are scattered generally north and westward from there into northern Trinity and western Siskiyou Counties. Disjunct populations occur in the White and San Bernardino Mountains. Elevational limits generally range from 6,550 to 9,850 feet, although quaking aspen occurs as low as 3,000 feet at McArthur-Burney Falls State Park, Shasta County. Aspen stands do not extend to the upper tree line in any locality (CDFG 2003).

Ponderosa pine habitat is found on suitable mountain and foothill sites throughout California except in the immediate area of San Francisco Bay, in the north coast area, south of Kern County in the Sierra Nevada and east of the Sierra Nevada Crest. Elevational ranges include 800 – 5,000 feet in the northern Sierra Nevada and Cascades, 3,937 – 6,890 feet in the Transverse and Peninsular Ranges, although it may be found as low as 3,445 feet in moist south-coastal sites. The ponderosa pine habitat is replaced by Jeffrey pine on the Mojave Desert slopes of the Transverse Range and often on the eastern side of the Peninsular and Coast Ranges (CDFG 2003).

The Montane Hardwood habitat ranges throughout California mostly west of the Cascade-Sierra Nevada crest. East of the crest, it is found in localized areas of Placer, El Dorado, Alpine, and San Bernardino Counties. Elevations range from 300 feet near the Pacific Ocean to 9,000 feet in southern California (CDFG 2003).



**Relationship to EWA Area of Analysis:** Montane woodland and forest can be found immediately above the drawdown zones of Lake Shasta, Keswick Reservoir, New Bullards Bar Reservoir, Sly Creek Reservoir, Little Grass Valley Reservoir, Lake Oroville, Hell Hole and French Meadows Reservoirs, Folsom Lake, and Silverwood Lake.

**CALFED NCCP Community Goal:** The goal is to replace the habitat functions lost as a result of effects on the montane woodland and forest habitat.

**Table A-1 Species considered for inclusion in the ASIP.**

**Decision Criteria**

- A Species included because the species occurs in habitat that has the potential to be affected by EWA actions.
- B Species not included because the species occurs in areas outside the EWA area of analysis.
- C Species not included because the species occurs in habitats that would not be adversely affected by EWA actions. (See Section 1.4.2.)
- D Species not included because the species is not likely to be affected by EWA actions because habitat is not limiting and the species is mobile. (See species paragraphs after Table 1-1.)
- E Fish species not included because life history requirements would not be affected by EWA actions.

**<sup>1</sup>Species Goals:**

- R = Recovery. Recover species' populations within the MSCS focus area to levels that ensure the species' long-term survival in nature.
- r = Contribute to recovery. Implement some of the actions deemed necessary to recover species' populations within the MSCS focus area.
- m = Maintain. Ensure that any adverse effects on the species that could be associated with implementation of CALFED actions will be fully offset through implementation of actions beneficial to the species.

**<sup>2</sup>Status:**

**Federal**

- E = Listed as endangered under FESA.
- T = Listed as threatened under FESA.
- PE = Proposed for listing as endangered under FESA.
- PT = Proposed for listing as threatened under FESA.
- C = Candidate for listing under FESA.
- PR = Protected under the Bald and Golden Eagle Protection Act.
- FPD= Federally proposed (Delisting)

**State**

- CE = Listed as endangered under CESA.
- CT = Listed as threatened under CESA.
- CCE = Candidate for listing as endangered under CESA.
- CCT = Candidate for listing as threatened under CESA.
- R = Listed as rare under California Native Plant Protection Act.
- CSC = California species of special concern.
- FP = Fully protected under California Fish and Game Code.
- SB = Specified birds under California Fish and Game Code.

**Other**

- 1A = CNPS List 1A.
- 1B = CNPS List 1B.
- 2 = CNPS List 2.
- 3 = CNPS List 3.
- SC = Other species of concern identified by CALFED.
- BO = Species covered by the CALFED Programmatic Biological Opinions

Species Goals <sup>1</sup>	Common Name	Scientific Name	Status <sup>2</sup>			Covered Species Determination		
			Federal	State	Other	Species evaluated in the EWA ASIP	Species considered but not further evaluated in the EWA ASIP	Decision Criteria
Mammals								
	American badger	<i>Taxidea taxus</i>	-	CSC	-		X	B
	Berkeley kangaroo rat	<i>Dipodomys heermanni berkeleyensis</i>	-	-	SC		X	B
	Buena Vista Lake Shrew	<i>Sorex ornatus relictus</i>	E	CSC	BO		X	B
	California bighorn sheep	<i>Ovis canadensis californiana</i>	E	CE	BO		X	B
	California red tree vole	<i>Phenacomys longicaudus</i>	-	CSC	SC		X	B
m	California wolverine	<i>Gulo gulo luteus</i>	-	CT/FP	SC		X	B
	Fresno Kangaroo Rat	<i>Dipodomys nitratoides exilis</i>	E	CE	BO		X	B
	Fringed myotis	<i>Myotis thysanodes</i>	-	-	SC		X	D
m	Giant kangaroo rat	<i>Dipodomys ingens</i>	E	CE	BO		X	B
m	Greater western mastiff-bat	<i>Eumops perotis californicus</i>	-	CSC	SC		X	D
	Hoary bat	<i>Laiurus cinereus</i>	-	CSC	-		X	D
	Long-eared myotis	<i>Myotis evotis</i>	-	-	SC		X	D
	Long-legged myotis	<i>Myotis volans</i>	-	-	SC		X	D
	Marysville California kangaroo rat	<i>Dipodomys heermanni eximus</i>	-	CSC	SC		X	B
m	Merced kangaroo rat	<i>Dipodomys heermanni dixonii</i>	-	-	SC		X	B
m	Nelson's antelope ground squirrel	<i>Ammospermophilus nelsoni</i>	-	CT	SC		X	B
	Pacific fisher	<i>Martes pennanti pacifica</i>	-	CSC	SC		X	B
	Pacific pocket mouse	<i>Perognathus longimembris pacificus</i>	E				X	B
	Pacific western big-eared bat	<i>Plecotus townsendii townsendii</i>	-	CSC	SC		X	D
	Pale Townsend's big-eared bat	<i>Plecotus townsendii pallescens</i>	-	CSC	SC		X	D
	Pallid bat	<i>Antrozous pallidus</i>	-	CSC	-		X	D
	Red bat	<i>Lasiurus borealis</i>	-	-	SC		X	D
m	Ringtail	<i>Bassariscus astutus</i>	-	FP	-		X	C
r	Riparian brush rabbit	<i>Sylvilagus bachmani riparius</i>	E	CE	BO		X	C
r	Salt marsh harvest mouse	<i>Reithrodontomys raviventris</i>	E	CE/FP	BO		X	C
	San Bernardino kangaroo rat (critical habitat)	<i>Dipodomys merriami parvus</i>	E				X	B
m	San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	E	CT	BO		X	B
	San Joaquin pocket mouse	<i>Perognathus inornatus</i>	-	-	SC		X	B
r	San Joaquin Valley woodrat	<i>Neotoma fuscipes riparia</i>	E	CSC	BO		X	C
r	San Pablo California vole	<i>Microtus californicus sanpabloensis</i>	-	CSC	-		X	B
	Short-nosed kangaroo rat	<i>Dipodomys nitratoides brevinasus</i>	-	CSC	SC		X	B
	Silver-haired bat	<i>Lasionycteris noctivagans</i>	-	CSC	-		X	D
	Small-footed myotis	<i>Myotis ciliolabrum</i>	-	-	SC		X	D
	Spotted bat	<i>Euderma maculatum</i>	-	CSC	SC		X	D
	Stephens' kangaroo rat	<i>Dipodomys stephensi</i>	E				X	C
R	Suisun ornate shrew	<i>Sorex ornatus sinuosus</i>	-	CSC	SC		X	B
	Tehachapi pocket mouse	<i>Perognathus alticola inexpectatus</i>		CSC			X	B
	Tipton Kangaroo Rat	<i>Dipodomys nitratoides nitratoides</i>	E	CE	BO		X	B

Appendix A  
Species and NCCP Communities Considered but not Evaluated in the EWA ASIP

Species Goals <sup>1</sup>	Common Name	Scientific Name	Status <sup>2</sup>			Covered Species Determination		
			Federal	State	Other	Species evaluated in the EWA ASIP	Species considered but not further evaluated in the EWA ASIP	Decision Criteria
	Tulare grasshopper mouse	<i>Onychomys torridus tularensis</i>	-	-	SC		X	B
	Yuma myotis	<i>Myotis yumanensis</i>	-	-	SC		X	D
<b>Birds</b>								
	Alameda song sparrow	<i>Melospiza melodia pusillula</i>	-	CSC	SC		X	D
m	Aleutian Canada goose	<i>Branta canadensis leucopareia</i>	-	-	BO	X		A
m	American peregrine falcon	<i>Falco peregrinus anatum</i>	-	CE/FP	-			D
	American white pelican	<i>Pelecanus erythrorhynchos</i>	-	CSC	SC		X	D
m	Bald eagle	<i>Haliaeetus leucocephalus</i>	T/PR	CE/FP	BO		X	D
r	Bank swallow	<i>Riparia riparia</i>	-	CT	-		X	C
	Belding's savannah sparrow	<i>Passerculus sandwichensis beldingi</i>		E			X	B
	Bell's sage sparrow	<i>Amphispiza belli belli</i>	-	CSC	SC		X	B
	Belted kingfisher	<i>Ceryle alcyon</i>	-	-	SC		X	C
m	Black tern	<i>Chlidonias niger</i>	-	CSC	SC	X		A
m	Black-crowned night heron (rookery)	<i>Nycticorax nycticorax</i>	-	-	SC		X	C
	Black swift (nesting)	<i>Cypseloides niger</i>			SC		X	D
r	California black rail	<i>Laterallus jamaicensis coturniculus</i>	-	CT/FP	SC		X	C
m	California brown pelican (critical habitat)	<i>Pelecanus occidentalis californicus</i>	E	CE/FP	BO		X	D
r	California clapper rail	<i>Rallus longirostris obsoletus</i>	E	CE/FP	BO		X	C
m	California condor (critical habitat)	<i>Gymnogyps californianus</i>	E	CE/FP	BO		X	B
	Coastal California gnatcatcher (critical habitat)	<i>Poliophtila californica californica</i>	T				X	B
m	California gull	<i>Larus californicus</i>	-	CSC	-		X	D
	California horned lark	<i>Eremophila alpestris actia</i>	-	-	SC		X	C
m	California least tern	<i>Sterna antillarum browni</i>	E	CE/FP	BO		X	C
	California spotted owl	<i>Strix occidentalis occidentalis</i>	-	CSC	SC		X	D
r	California yellow warbler	<i>Dendroica petechia brewsteri</i>	-	CSC	-		X	C
m	Cooper's hawk	<i>Accipiter cooperii</i>	-	CSC	-		X	D
m	Double-crested cormorant (rookery)	<i>Phalacrocorax auritus</i>	-	CSC	-		X	D
	Ferruginous hawk	<i>Buteo regalis</i>	-	CSC	SC		X	D
m	Golden eagle	<i>Aquila chrysaetos</i>	PR	CSC/FP	-		X	D
	Grasshopper sparrow	<i>Ammodramus savannarum</i>	-	-	SC		X	C
m	Great blue heron (rookery)	<i>Ardea herodias</i>	-	-	SC		X	D
m	Great egret (rookery)	<i>Casmerodius albus</i>	-	SB	SC	X		A
r	Greater sandhill crane	<i>Grus canadensis tabida</i>	-	CT/FP	-	X		A
	Harlequin duck	<i>Histrionicus histrionicus</i>	-	CSC	SC		X	D
r	Least Bell's vireo (critical habitat)	<i>Vireo bellii pusillus</i>	E	CE	BO		X	C
	Le Conte's thrasher	<i>Toxostoma lecontei</i>			SC		X	B
r	Little willow flycatcher	<i>Empidonax traillii brewsteri</i>	-	CE	SC		X	C
	Loggerhead shrike	<i>Lanius ludovicianus</i>	-	CSC	-		X	D
m	Long-billed curlew	<i>Numenius americanus</i>	-	CSC	-	X		A
m	Long-eared owl	<i>Asio otus</i>	-	CSC	-		X	D
	Marbled Murrelet	<i>Brachyramphus marmoratus</i>	T	CE	BO		X	C

Species Goals <sup>1</sup>	Common Name	Scientific Name	Status <sup>2</sup>			Covered Species Determination		
			Federal	State	Other	Species evaluated in the EWA ASIP	Species considered but not further evaluated in the EWA ASIP	Decision Criteria
	Merlin	<i>Falco columbarius</i>	-	CSC	-		X	D
m	Mountain plover	<i>Charadrius montanu</i>	PT	CSC	BO		X	D
	Northern goshawk	<i>Accipiter gentilis</i>	-	-	SC		X	C
m	Northern harrier	<i>Circus cyaneus</i>	-	CSC	-		X	D
m	Northern spotted owl (critical habitat)	<i>Strix occidentalis caurina</i>	T	-	BO		X	C
	Oregon vesper sparrow	<i>Poocetes gramineus affinis</i>	-	-	SC		X	B
m	Osprey	<i>Pandion haliaetus</i>	-	CSC/SB	-		X	D
	Pacific-slope flycatcher	<i>Empidonax difficilis insulicola</i>	-	-	SC		X	B
	Prairie falcon	<i>Falco mexicanus</i>	-	CSC	-		X	D
	Purple martin	<i>Progne subis</i>	-	CSC	-		X	C
	Sacramento Valley song sparrow	<i>Melospiza melodia mailliardi</i>	-	-	SC		X	C
r	Saltmarsh common yellowthroat	<i>Geothlypis trichas sinuosa</i>	-	CSC	SC		X	C
R	San Pablo song sparrow	<i>Melospiza melodia samuelis</i>	-	CSC	SC		X	B
	Sharp-shinned hawk	<i>Accipiter striatus</i>	-	CSC	-		X	D
m	Short-eared owl	<i>Asio flammeus</i>	-	CSC	-		X	D
	Short-tailed albatross	<i>Phoebastria albatrus</i>	E				X	B
m	Snowy egret (rookery)	<i>Egretta thula</i>	-	SB	SC	X		A
	Sora	<i>Porzana carolina</i>	-	-	SC		X	C
	Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	CE	BO		X	C
R	Suisun song sparrow	<i>Melospiza melodia maxillaris</i>	-	CSC	SC		X	C
r	Swainson's hawk	<i>Buteo swainsoni</i>	-	CT	-		X	D
m	Tricolored blackbird	<i>Agelaius tricolor</i>	-	CSC	SC	X		A
m	Western burrowing owl	<i>Athene cunicularia hypugea</i>	-	CSC	SC		X	D
m	Western least bittern	<i>Ixobrychus exilis</i>	-	CSC	SC		X	D
m	Western snowy plover (critical habitat)	<i>Charadrius alexandrinus nivosus</i>	T	CSC	BO		X	D
r	Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	-	CE	-		X	C
m	White-faced ibis	<i>Plegadis chihi</i>	-	CSC	SC	X		A
m	White-tailed kite	<i>Elanus leucurus</i>	-	FP	-		X	D
	Yellow rail	<i>Coturnicops noveboracensis</i>	-	CSC	-		X	C
m	Yellow-breasted chat	<i>Icteria virens</i>	-	CSC	-		X	C
	Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	-	-	SC		X	C
<b>Reptiles</b>								
m	Alameda whipsnake	<i>Masticophis lateralis euryxanthus</i>	E	CT	BO		X	B
m	Blunt-nosed leopard lizard	<i>Gambelia sila</i>	E	CE/FP	BO		X	B
	California horned lizard	<i>Phrynosoma coronatum frontale</i>	-	CSC	SC		X	C
r	Giant garter snake	<i>Thamnophis gigas</i>	T	CT	BO	X		A
	Orange throated whiptail	<i>Cnemidophorus hyperythrus</i>			SC			C
	San Diego horned lizard	<i>Phrynosoma coronatum blainvillei</i>			SC			C
	San Francisco garter snake	<i>Thamnophis sirtalis tetrataenia</i>	E	CE	BO		X	B
m	San Joaquin whipsnake	<i>Masticophis flagellum ruddocki</i>	-	CSC	SC		X	B
	Silvery legless lizard	<i>Anniella pulchra pulchra</i>	-	CSC	SC		X	B

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			Federal	State	Other	Species evaluated in the EWA ASIP	Species considered but not further evaluated in the EWA ASIP	Decision Criteria
	Two-striped garter snake	<i>Thamnophis hammondi</i>			SC		X	B
m	Western pond turtle	<i>Clemmys marmorata</i>	-	CSC	SC	X		A
<b>Amphibians</b>								
	Arroyo Toad (critical habitat)	<i>Bufo californicus</i>	E				X	B
m	California red-legged frog (critical habitat)	<i>Rana aurora draytonii</i>	T	CSC	BO		X	C
m	California tiger salamander	<i>Ambystoma californiense</i>	C	CSC	BO		X	C
	Cascades frog	<i>Rana cascadae</i>	-	-	SC		X	B
m	Foothill yellow-legged frog	<i>Rana boylei</i>	-	CSC	SC		X	C
m	Limestone salamander	<i>Hydromantes brunus</i>	-	CT/FP	SC		X	B
	Mountain yellow-legged frog- So. Calif. Pop.	<i>Rana muscosa</i>	PE				X	B
m	Shasta salamander	<i>Hydromantes shastae</i>	-	CT	SC		X	C
	Tailed frog	<i>Ascaphus truei</i>	-	CSC	SC		X	B
m	Western spadefoot	<i>Scaphiopus hammondi</i>	-	CSC	SC		X	C
<b>Fish</b>								
m	Central California Coast steelhead evolutionarily significant unit (ESU)	<i>Oncorhynchus mykiss</i>	E	-	BO		X	B
R	Central Valley fall-/late-fall-run chinook salmon ESU (essential fish habitat)	<i>Oncorhynchus tshawytscha</i>	C	CSC	-	X		A
R	Sacramento River winter-run chinook salmon ESU (essential fish habitat)	<i>Oncorhynchus tshawytscha</i>	E	CE	BO	X		A
R	Central Valley spring-run chinook salmon ESU (critical habitat) (essential fish habitat)	<i>Oncorhynchus tshawytscha</i>	T	CT	BO	X		A
R	Central Valley steelhead ESU	<i>Oncorhynchus mykiss</i>	T	-	BO	X		A
R	Delta smelt (critical habitat)	<i>Hypomesus transpacificus</i>	T	CT	BO	X		A
R	Green sturgeon	<i>Acipenser medirostris</i>	-	CSC	-		X	E
m	Hardhead	<i>Mylopharodon conocephalus</i>	-	CSC	-		X	E
	Kern brook lamprey	<i>Lampetra hubbsi</i>	-	CSC	SC		X	B
R	Longfin smelt	<i>Spirinchus thaleichthys</i>	-	CSC	-		X	E
m	McCloud River redband trout	<i>Oncorhynchus mykiss</i> ssp 2	C	CSC	BO		X	B
	Northern Anchovy (essential fish habitat)	<i>Engraulis mordax</i>	-	-	-	X		A
	Pacific lamprey	<i>Lampetra tridentata</i>	-	-	SC		X	E
	Pacific Sardine (essential fish habitat)	<i>Sardinops sagax</i>	-	-	-	X		A
	Pit roach	<i>Lavinia symmetricus mitrulus</i>	-	CSC	SC		X	B
	River lamprey	<i>Lampetra ayresi</i>	-	CSC	-		X	E
m	Rough sculpin	<i>Cottus Asperimus</i>	-	CT/FP	SC		X	E
r	Sacramento perch	<i>Archoplites interruptus</i>	-	CSC	SC			E
R	Sacramento splittail	<i>Pogonichthys macrolepidotus</i>	T	CSC	BO	X		A
m	San Joaquin roach	<i>Lavinia symmetricus</i> ssp. (San Joaquin)	-	CSC	SC			E
	Santa Ana sucker	<i>Carosromus santaanae</i>	T				X	B
	Shortnose sucker	<i>Choasmistes brevirostris</i>	E	CE	BO		X	B
	Southern Steelhead	<i>Oncorhynchus mykiss irideus</i>	E		SC		X	B

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	Starry Flounder (essential fish habitat)	<i>Platichthys stellatus</i>	-	-	-	X		A
	Tidewater goby	<i>Eucyclogobius newberryi</i>	E	CSC	BO		X	B
	Unarmored threespine stickleback (proposed critical habitat)	<i>Gasterosteus aculeatus williamsoni</i>	E				X	B
<b>Insects</b>								
	Amphibious caddisfly	<i>Desmona bethula</i>	-	-	SC		X	C
	Antioch andrenid bee	<i>Perdita scitula antiochensis</i>	-	-	SC		X	C
	Antioch cophuran robberfly	<i>Cophura hurdi</i>	-	-	SC		X	C
	Antioch Dunes anthicid beetle	<i>Anthicus antiochensis</i>	-	-	SC		X	C
	Antioch efferian robberfly	<i>Efferia anticohi</i>	-	-	SC		X	C
	Antioch mutillid wasp	<i>Myrmosula pacifica</i>	-	-	SC		X	C
	Antioch sphecid wasp	<i>Philanthus nasilis</i>	-	-	SC		X	C
	Bay checkerspot butterfly	<i>Euphydryas editha bayensis</i>	T		BO		X	B
	Bohart's blue butterfly	<i>Philotiella speciosa bohartorum</i>	-	-	SC		X	B
	Bridges' Coast Range shoulderband snail	<i>Helminthoglypta nickliniana bridgesi</i>	-	-	SC		X	B
m	California freshwater shrimp	<i>Syncaris pacifica</i>	E	CE	BO		X	C
	California linderiella	<i>Linderiella occidentalis</i>	-	-	SC		X	B
m	Callippe silverspot butterfly	<i>Speyeria callippe callippe</i>	E	-	BO		X	B
	Ciervo aegialian scarab beetle	<i>Aegialia concinna</i>	-	-	SC		X	B
m	Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	E	-	BO		X	C
	Curved-foot hygrotus diving beetle	<i>Hygrotus curvipes</i>	-	-	SC		X	C
r	Delta green ground beetle (critical habitat)	<i>Elaphrus viridis</i>	T	-	BO		X	C
	Globose dune beetle	<i>Coelus globosus</i>	-	-	SC		X	B
	Gold Rush hanging fly	<i>Orbittacus obscurus</i>	-	-	SC		X	C
	Ground beetle (no species-specific name)	<i>Scaphinotus behrensi</i>	-	-	SC		X	B
	Hurd's metapogon robberfly	<i>Metapogon hurdi</i>	-	-	SC		X	B
	Kern primrose sphinx moth	<i>Euproserpinus euterpe</i>	T		BO		X	B
R	Lange's metalmark	<i>Apodemia mormo langei</i>	E	-	BO		X	C
	Leech's skyline diving beetle	<i>Hydroporus leechi</i>	-	-	SC		X	C
m	Longhorn fairy shrimp	<i>Branchinecta longiantenna</i>	E	-	BO		X	C
	Marin elfin butterfly	<i>Incisalia mossii</i>	-	-	SC		X	B
	Merced Canyon shoulderband snail	<i>Helminthoglypta allynsmithi</i>	-	-	SC		X	B
	Middlekauf's shieldback katydid	<i>Idiostatus middlekaufi</i>	-	-	SC		X	B
m	Mid-valley fairy shrimp	<i>Brachinecta n. sp. "mid-valley"</i>	-	-	SC		X	C
	Mission blue butterfly	<i>Icaricia icarioides missionensis</i>	E		BO		X	B
	Moestan blister beetle	<i>Lytta moesta</i>	-	-	SC		X	B
m	Monarch butterfly (roost)	<i>Danaus plexippus</i>	-	-	-		X	C
	Morrison's blister beetle	<i>Lytta morrisoni</i>	-	-	SC		X	B
	Myrtle's silverspot butterfly	<i>Speyeria zerene myrtleae</i>	E		BO		X	B
	Opler's longhorn moth	<i>Adela oplerella</i>	-	-	SC		X	B
	Redheaded sphecid wasp	<i>Eucerceris ruficeps</i>	-	-	SC		X	B
	Ricksecker's water scavenger beetle	<i>Hydrochara rickseckeri</i>	-	-	SC		X	B

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	Riverside fairy shrimp	<i>Streptocephalus wootoni</i>	E				X	C
	Sacramento anthicid beetle	<i>Anthicus sacramento</i>	-	-	SC		X	C
	Sacramento Valley tiger beetle	<i>Cicindela hirticollis abrupta</i>	-	-	SC		X	C
	San Bruno elfin butterfly	<i>Incisalia mossii bayensis</i>	E		BO		X	B
	San Joaquin dune beetle	<i>Coelus gracilis</i>	-	-	SC		X	B
	San Joaquin tiger beetle	<i>Cicindela tranquebarica</i> ssp.	-	-	SC		X	B
	Sandy beach tiger beetle	<i>Cicindela hirticollis grvida</i>	-	-	SC		X	B
	Shasta crayfish	<i>Pacifastacus fortis</i>	E	CE	BO		X	C
m	Shasta sideband	<i>Monadenia troglodytes</i>	-	-	SC		X	C
R	Valley elderberry longhorn beetle (critical habitat)	<i>Desmocerus californicus dimorphus</i>	T	-	BO		X	C
m	Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	T	-	BO		X	C
m	Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	E	-	BO		X	C
	Williams' bronze shoulderband snail	<i>Helminthoglypta arrosa williamsi</i>	-	-	SC		X	B
	Yellow-banded andrenid bee	<i>Perdita hirticeps luteocincta</i>	-	-	SC		X	B
Plants								
m	Adobe-lily	<i>Fritillaria pluriflora</i>	-	-	1B/SC		X	
m	Ahart's dwarf rush	<i>Juncus leiospermus</i> var. <i>ahartii</i>	-	-	1B/SC		X	
m	Ahart's paronychia	<i>Paronychia ahartii</i>	-	-	1B/SC		X	
r	Alkali milkvetch	<i>Astragalus tener</i> var. <i>tener</i>	-	-	1B/SC		X	
	American scheuchzeria	<i>Scheuchzeria palustris</i> var. <i>americana</i>	-	-	2		X	
	Anthony Peak lupine	<i>Lupinus antoninus</i>	-	-	1B/SC		X	
R	Antioch Dunes evening-primrose (critical habitat)	<i>Oenothera deltoides</i> ssp. <i>howellii</i>	E	CE	1B/BO		X	
m	Arburua Ranch jewelflower	<i>Streptanthus insignis</i> ssp. <i>lyonii</i>	-	-	1B/SC		X	
	Baja California birdbush	<i>Ornithostaphylos oppositifolia</i>		CE			X	
m	Baker's larkspur	<i>Delphinium bakeri</i>	E	R	1B/BO		X	
m	Baker's manzanita	<i>Arctostaphylos bakeri</i> ssp. <i>bakeri</i>	-	R	1B/SC		X	
	Baker's navarretia	<i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	-	-	1B		X	
	Bakersfield cactus	<i>Opuntia treleasei</i>	E	CE	BO		X	
	Beach layia	<i>Layia carnosa</i>	E	CE	BO		X	
m	Beaked clarkia	<i>Clarkia rostrata</i>	-	-	1B/SC		X	
	Bearded popcornflower	<i>Plagiobothrys hystericulus</i>	-	-	1A		X	
m	Bellinger's meadowfoam	<i>Limnanthes floccosa</i> ssp. <i>bellingiana</i>	-	-	1B/SC		X	
m	Ben Lomond buckwheat	<i>Eriogonum nudum</i> var. <i>decurrens</i>	-	-	1B		X	
	Ben Lomond spineflower	<i>Chorizanthe pungens</i> var. <i>hartwegiana</i>	E		BO		X	
	Ben Lomond wallflower	<i>Erysimum teretifolium</i>	E	CE	BO		X	
m	Big Bear Valley woollypod	<i>Astragalus leucolobus</i>	-	-	1B/SC		X	
m	Big tarplant	<i>Blepharizonia plumosa</i> ssp. <i>plumosa</i>	-	-	1B		X	
	Big-scale balsamroot	<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i>	-	-	1B		X	
	Bisbee Peak rush-rose	<i>Helianthemum suffrutescens</i>	-	-	3		X	
m	Boggs Lake hedge-hyssop	<i>Gratiola heterosepala</i>	-	CE	1B		X	
m	Brandegee's eriastrium	<i>Eriastrum brandegeae</i>	-	-	1B/SC		X	



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	Braunton's milk-vetch	<i>Astragalus brauntonii</i>	E				X	
m	Brewer's western flax	<i>Hesperolinon breweri</i>	-	-	1B/SC		X	
r	Bristly sedge	<i>Carex comosa</i>	-	-	2		X	
m	Brittlescale	<i>Atriplex depressa</i>	-	-	1B/SC		X	
	Burke's goldfields	<i>Lasthenia burkei</i>	E	CE	BO		X	
	Butte County checkerbloom	<i>Sidalcea robusta</i>	-	-	1B/SC		X	
	Butte County fritillary	<i>Fritillaria eastwoodiae</i>	-	-	1B/SC		X	
m	Butte County meadowfoam	<i>Limnanthes floccosa</i> ssp. <i>californica</i>	E	CE	1B/BO		X	
	Butte County morning-glory	<i>Calystegia atriplicifolia</i> ssp. <i>buttensis</i>	-	-	3/SC		X	
m	California beaked-rush	<i>Rhynchospora californica</i>	-	-	1B/SC		X	
	California jewelflower	<i>Caulanthus californicus</i>	E	CE	BO		X	
	California orcutt grass	<i>Orcuttia californica</i>	E				X	
m	California seablite	<i>Suaeda californica</i>	E	-	1B/BO		X	
	California sycamore	<i>Platanus racemosa</i>	-	-	SC		X	
m	California vervain	<i>Verbena californica</i>	T	CT	1B/BO		X	
	Calistoga ceanothus	<i>Ceanothus divergens</i>	-	-	1B/SC		X	
m	Calistoga popcornflower	<i>Plagiobothrys strictus</i>	E	CT	1B/BO		X	
	Camatta Canyon amole	<i>Chlorogalum pupureum</i> var. <i>reductum</i>	T	R			X	
	Cantelow's lewisia	<i>Lewisia cantelovii</i>	-	-	1B		X	
	Canyon Creek stonecrop	<i>Sedum paradisum</i>	-	-	1B/SC		X	
	Caper-fruited tropidocarpum	<i>Tropidocarpum capparideum</i>	-	-	1A/SC		X	
m	Carquinez goldenbush	<i>Isocoma arguta</i>	-	-	1B/SC		X	
	Cascade alpine campion	<i>Silene suksdorfii</i>	-	-	2		X	
m	Chinese Camp brodiaea	<i>Brodiaea pallida</i>	T	CE	1B/BO		X	
m	Clara Hunt's milkvetch	<i>Astragalus clarianus</i>	E	CT	1B/BO		X	
	Closed-throated beardtongue	<i>Penstemon personatus</i>	-	-	1B/SC		X	
	Clustered lady's-slipper	<i>Cypripedium fasciculatum</i>	-	-	SC		X	
	Cobb Mountain lupine	<i>Lupinus sericatus</i>	-	-	1B		X	
m	Colusa grass	<i>Neostapfia colusana</i>	T	CE	1B/BO		X	
	Colusa layia	<i>Layia septentrionalis</i>	-	-	1B		X	
	Conejo dudley	<i>Dudleya abramsii</i> spp. <i>parva</i>	T				X	
m	Congdon's lomatium	<i>Lomatium congdonii</i>	-	-	1B/SC		X	
m	Congdon's tarplant	<i>Hemizonia parryi</i> ssp. <i>congdonii</i>	-	-	1B/SC		X	
m	Contra Costa goldfields	<i>Lasthenia conjugens</i>	E	-	1B/BO		X	
m	Contra Costa manzanita	<i>Arctostaphylos manzanita</i> ssp. <i>laevigata</i>	-	-	1B		X	
R	Contra Costa wallflower (critical habitat)	<i>Erysimum capitatum</i> ssp. <i>angustatum</i>	E	CE	1B/BO		X	
	Coulter's goldfields	<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>	-	-	1B		X	
	Coyote ceanothus	<i>Ceanothus ferrisae</i>	E		BO		X	
r	Crampton's tuctoria	<i>Tuctoria mucronata</i>	E	CE	1B/BO		X	
	Cut-leaved ragwort	<i>Senecio eurycephalus</i> var. <i>lewisrosei</i>	-	-	1B		X	
r	Delta coyote-thistle	<i>Eryngium racemosum</i>	-	CE	1B/SC		X	

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r	Delta mudwort	<i>Limosella subulata</i>	-	-	2		X	
r	Delta tule pea	<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	-	-	1B/SC		X	
m	Diablo helianthella	<i>Helianthella castanea</i>	-	-	1B/SC		X	
m	Diamond-petaled California poppy	<i>Eschscholzia rhombipetala</i>	-	-	1A/SC		X	
m	Dimorphic snapdragon	<i>Antirrhinum subcordatum</i>	-	-	1B		X	
	Dissected-leaf toothwort	<i>Cardamine pachystigma</i> var. <i>dissectifolia</i>	-	-	3		X	
	Douglas' pogogyne	<i>Pogogyne douglasii</i> ssp. <i>parviflora</i>	-	-	3		X	
m	Drymaria-like western flax	<i>Hesperolinon drymarioides</i>	-	-	1B/SC		X	
	Dubious pea	<i>Lathyrus sulphureus</i> var. <i>argillaceus</i>	-	-	3		X	
	Dwarf downingia	<i>Downingia pusilla</i>	-	-	2		X	
m	Dwarf soaproot	<i>Chlorogalum pomeridianum</i> var. <i>minus</i>	-	-	1B		X	
m	Eel-grass pondweed	<i>Potamogeton zosteriformis</i>	-	-	2		X	
m	El Dorado bedstraw	<i>Galium californicum</i> ssp. <i>sierrae</i>	E	R	1B/BO		X	
	El Dorado County mule ears	<i>Wyethia reticulata</i>	-	-	1B/SC		X	
	Engelmann spruce	<i>Picea engelmannii</i>	-	-	2		X	
m	English Peak greenbriar	<i>Smilax jamesii</i>	-	-	1B		X	
	English sundew	<i>Drosera anglica</i>	-	-	2		X	
	Enterprise clarkia	<i>Clarkia mosquinii</i> ssp. <i>xerophila</i>	-	-	1B/SC		X	
	Feather River stonecrop	<i>Sedum albowmarginatum</i>	-	-	1B		X	
m	Ferris' milkvetch	<i>Astragalus tener</i> var. <i>ferrisiae</i>	-	-	1B/SC		X	
m	Few-flowered navarretia	<i>Navarretia leucocephala</i> ssp. <i>pauciflora</i>	E	CT	1B/BO		X	
	Forked fiddleneck	<i>Amsinckia vernicosa</i> var. <i>furcata</i>	-	-	SC		X	
	Fountain thistle	<i>Cirsium fontinale</i> var. <i>fontinale</i>	E	CE	BO		X	
m	Four-angled spikerush	<i>Eleocharis quadrangulata</i>	-	-	2		X	
	Fox sedge	<i>Carex vulpinoidea</i>	-	-	2		X	
	Fragrant fritillary	<i>Fritillaria liliacea</i>	-	-	1B/SC		X	
	Freed's jewelflower	<i>Streptanthus brachiatus</i> ssp. <i>hoffmanii</i>	-	-	1B/SC		X	
	Gambel's watercress	<i>Rorippa gambellii</i>	E				X	
	Gaviota tarplant	<i>Hemizonia increscens</i> ssp. <i>villosa</i>	E	CE			X	
	Gairdner's yampah	<i>Perideridia gairdneri</i> ssp. <i>gairdneri</i>	-	-	SC		X	
	Golden draba	<i>Draba aureola</i>	-	-	1B		X	
m	Greene's tuctoria	<i>Tuctoria greenei</i>	E	R	1B/BO		X	
	Hairless popcornflower	<i>Plagiobothrys glaber</i>	-	-	1A		X	
m	Hairy orcutt grass	<i>Orcuttia pilosa</i>	E	CE	1B/BO		X	
m	Hall's bush mallow	<i>Malacothamnus hallii</i>	-	-	1B		X	
	Hall's madia	<i>Madia hallii</i>	-	-	1B/SC		X	
	Hall's rupertia	<i>Rupertia hallii</i>	-	-	1B		X	
m	Hall's tarplant	<i>Hemizonia halliana</i>	-	-	1B		X	
m	Hartweg's golden sunburst	<i>Pseudobahia bahiifolia</i>	E	CE	1B/BO		X	
	Hayfield tarplant	<i>Hemizonia congesta</i> ssp. <i>leucocephala</i>	-	-	3		X	
m	Heartscale	<i>Atriplex cordulata</i>	-	-	1B/SC		X	

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m	Heckard's peppergrass	<i>Lepidium latipes</i> var. <i>heckardii</i>	-	-	1B		X	
m	Henderson's bent grass	<i>Agrostis hendersonii</i>	-	-	3/SC		X	
	Hickman's Potentilla	<i>Potentilla hickmanii</i>	E	CE	BO		X	
m	Hispid bird's-beak	<i>Cordylanthus mollis</i> ssp. <i>hispidus</i>	-	-	1B/SC		X	
	Hooked popcornflower	<i>Plagiobothrys uncinatus</i>	-	-	1B/SC		X	
	Hoover's calycadenia	<i>Calycadenia hooveri</i>	-	-	1B/SC		X	
m	Hoover's eriastrum	<i>Eriastrum hooveri</i>	T	-	BO		X	
m	Hoover's spurge	<i>Chamaesyce hooveri</i>	T	-	1B/BO		X	
	Horned butterwort	<i>Pinguicula vulgaris</i>	-	-	2		X	
m	Hospital Canyon larkspur	<i>Delphinium californicum</i> ssp. <i>interius</i>	-	-	1B/SC		X	
	Howell's lewisia	<i>Lewisia cotyledon</i>	-	-	3		X	
m	Indian Valley brodiaea	<i>Brodiaea coronaria</i> ssp. <i>rosea</i>	-	CE	1B		X	
	Indian Valley bush mallow	<i>Malacothamnus aboriginum</i>	-	-	1B		X	
m	lone buckwheat	<i>Eriogonum apricum</i> var. <i>apricum</i>	E	CE	1B/BO		X	
m	lone manzanita	<i>Arctostaphylos myrtifolia</i>	T	-	1B/BO		X	
m	Irish Hill buckwheat	<i>Eriogonum apricum</i> var. <i>prostratum</i>	-	CE	1B/BO		X	
	Island rush-rose	<i>Helianthemum greenei</i>	T				X	
m	Jepson's milkvetch	<i>Astragalus rattanii</i> var. <i>jepsonianus</i>	-	-	1B		X	
	Jepson's onion	<i>Allium jepsonii</i>	-	-	1B/SC		X	
	Keck's checker-mallow	<i>Sidalcea keckii</i>	E		BO		X	
m	Kenwood Marsh checkerbloom	<i>Sidalcea oregana</i> ssp. <i>valida</i>	E	CE	1B/BO		X	
	Kern mallow	<i>Eremophila kernensis</i>	E		BO		X	
m	Klamath manzanita	<i>Arctostaphylos klamathensis</i>	-	-	1B/SC		X	
	Kneeland Prairie penny-cress	<i>Thlaspi montanum</i> var. <i>californicum</i>	E		BO		X	
	Kruckeberg's jewelflower	<i>Streptanthus morrisii</i> ssp. <i>kruckebergii</i>	-	-	1B/SC		X	
	La Graciosa thistle	<i>Cirsium loncholepis</i>	E	CT			X	
	Lake County stonecrop	<i>Parvisedum leiocarpum</i>	E	CE	BO		X	
m	Large-flowered fiddleneck (critical habitat)	<i>Amsinckia grandiflora</i>	E	CE	1B/BO		X	
	Lassen Peak smelowskia	<i>Smelowskia ovalis</i> var. <i>congesta</i>	-	-	1B/SC		X	
m	Layne's ragwort	<i>Senecio layneae</i>	T	R	1B/BO		X	
m	Legenere	<i>Legenere limosa</i>	-	-	1B/SC		X	
m	Lesser saltscale	<i>Atriplex minuscule</i>	-	-	1B/SC		X	
	Little mousetail	<i>Myosurus minimus</i> ssp. <i>apus</i>	-	-	3/SC		X	
m	Loch Lomond button-celery	<i>Eryngium constancei</i>	E	CE	1B/BO		X	
	Lompoc yerba santa	<i>Eriodictyon capitatum</i>	E	R			X	
	Long-haired star-tulip	<i>Calochortus longebarbatus</i> var. <i>longebarbatus</i>	-	-	1B		X	
	Long-leaved starwort	<i>Stellaria longifolia</i>	-	-	2		X	
m	Lost Hills crownscale	<i>Atriplex vallicola</i>	-	-	1B/SC		X	
	Lyon's pentachaeta	<i>Pentachaeta lyonii</i>	E				X	
m	Mad-dog skullcap	<i>Scutellaria lateriflora</i>	-	-	2		X	
m	Madera linanthus	<i>Linanthus serrulatus</i>	-	-	1B		X	

Appendix A  
Species and NCCP Communities Considered but not Evaluated in the EWA ASIP

Species Goals <sup>1</sup>	Common Name	Scientific Name	Status <sup>2</sup>			Covered Species Determination		
			Federal	State	Other	Species evaluated in the EWA ASIP	Species considered but not further evaluated in the EWA ASIP	Decision Criteria
m	Many-flowered navarretia	<i>Navarretia leucocephala</i> ssp. <i>plieantha</i>	E	E	1B/BO		X	
	Marcescent dudleya	<i>Dudleya cymosa</i> spp. <i>marcescens</i>	T				X	
m	Marin checkerbloom	<i>Sidalcea hickmanii</i> ssp. <i>viridis</i>	-	-	1B/SC		X	
	Marin County navarretia	<i>Navarretia rosulata</i>	-	-	1B		X	
m	Marin knotweed	<i>Polygonum marinense</i>	-	-	3/SC		X	
m	Marin western flax	<i>Hesperolinon congestum</i>	T	CT	1B/BO		X	
m	Mariposa clarkia	<i>Clarkia biloba</i> ssp. <i>australis</i>	-	-	1B		X	
	Mariposa pussy-paws	<i>Calyptridium pulchellum</i>	T		BO		X	
m	Marsh checkerbloom	<i>Sidalcea oregana</i> ssp. <i>hydrophila</i>	-	-	1B/SC		X	
	Marsh sandwort	<i>Arenaria paludicola</i>	E	CE	BO		X	
m	Marsh skullcap	<i>Scutellaria galericulata</i>	-	-	2		X	
m	Mason's ceanothus	<i>Ceanothus masonii</i>	-	R	1B/SC		X	
R	Mason's lilaeopsis	<i>Lilaeopsis masonii</i>	-	R	1B/SC		X	
	Merced monardella	<i>Monardella leucocephala</i>	-	-	1A/SC		X	
m	Merced phacelia	<i>Phacelia ciliata</i> var. <i>opaca</i>	-	-	1B/SC		X	
	Metcalf Canyon jewelflower	<i>Streptanthus albidus</i> ssp. <i>albidus</i>	E		BO		X	
	Mingan moonwort	<i>Botrychium minganense</i>	-	-	2		X	
	Monterey spineflower	<i>Chorizanthe pungens</i> var. <i>pungens</i>	T		BO		X	
	Morrison's jewelflower	<i>Streptanthus morrisonii</i> ssp. <i>morrisonii</i>	-	-	1B/SC		X	
	Mosquin's clarkia	<i>Clarkia mosquinii</i>	-	-	1B		X	
	Moss phlox	<i>Phlox muscoides</i>	-	-	2		X	
m	Most beautiful jewel-flower	<i>Streptanthus albidus</i> ssp. <i>peramoensis</i>	-	-	1B		X	
m	Mt. Diablo bird's-beak	<i>Cordylanthus nidularius</i>	-	R	1B/SC		X	
	Mt. Diablo buckwheat	<i>Eriogonum truncatum</i>	-	-	1A/SC		X	
m	Mt. Diablo fairy lantern	<i>Calochortus pulchellus</i>	-	-	1B		X	
m	Mt. Diablo jewelflower	<i>Streptanthus hispidus</i>	-	-	1B/SC		X	
m	Mt. Diablo manzanita	<i>Arctostaphylos auriculata</i>	-	-	1B		X	
m	Mt. Diablo phacelia	<i>Phacelia phacelioides</i>	-	-	1B/SC		X	
m	Mt. Hamilton coreopsis	<i>Coreopsis hamiltonii</i>	-	-	1B/SC		X	
m	Mt. Hamilton jewelflower	<i>Streptanthus callistus</i>	-	-	1B/SC		X	
	Mt. Hamilton thistle	<i>Cirsium fontinale</i> var. <i>campylon</i>	-	-	1B/SC		X	
	Mt. Saint Helena morning-glory	<i>Calystegia collina</i> ssp. <i>oxyphylla</i>	-	-	SC		X	
	Mt. Tamalpais jewelflower	<i>Streptanthus glandulosus</i> ssp. <i>pulchellus</i>	-	-	1B		X	
m	Mt. Tedoc linanthus	<i>Linanthus nuttallii</i> ssp. <i>howellii</i>	-	-	1B/SC		X	
	Munz's onion	<i>Allium munzii</i>	E				X	
	Munz's tidy-tips	<i>Layia munzii</i>	-	-	1B		X	
m	Napa blue grass	<i>Poa napensis</i>	E	CE	1B/BO		X	
m	Napa western flax	<i>Hesperolinon serpentinum</i>	-	-	1B		X	
	Narrow-leaved daisy	<i>Erigeron angustatus</i>	-	-	1B		X	
	Nelson's pepperwort	<i>Marsilea oligospora</i>	-	-	3		X	
	Nevin's barberry	<i>Berberis nevinii</i>	E				X	

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	Niles madia	<i>Madia doris-nilesiae</i>	-	-	1B		X	
	Nissenan manzanita	<i>Arctostaphylos nissenana</i>	-	-	1B/SC		X	
m	North Coast semaphore grass	<i>Pleuropogon hooverianus</i>	-	CCE	1B/SC		X	
r	Northern California black walnut (native stands)	<i>Juglans californica</i> var. <i>hindsii</i>	-	-	1B/SC		X	
	Northern daisy	<i>Trimorpha acris</i> var. <i>debilis</i>	-	-	2		X	
	Northern spleenwort	<i>Asplenium septentrionale</i>	-	-	2		X	
	Nuttall's pondweed	<i>Potamogeton epihydrus</i> ssp. <i>nuttallii</i>	-	-	2		X	
	Obtuse starwort	<i>Stellaria obtusa</i>	-	-	2		X	
	Orcutt's hazardia	<i>Hazardia orcuttii</i>		CCE			X	
	Oregon fireweed	<i>Epilobium oreganum</i>	-	-	1B/SC		X	
m	Pale-yellow layia	<i>Layia heterotricha</i>			1B/SC		X	
m	Pallid manzanita	<i>Arctostaphylos pallida</i>	T	CE	1B/BO		X	
m	Palmate-bracted bird's-beak	<i>Cordylanthus palmatus</i>	E	CE	1B/BO		X	
m	Panoche peppergrass	<i>Lepidium jaredii</i> ssp. <i>album</i>	-	-	1B/SC		X	
	Parish's daisy (proposed critical habitat)	<i>Erigeron parishii</i>	T				X	
m	Parry's horkelia	<i>Horkelia parryi</i>	-	-	1B/SC		X	
	Petaluma popcornflower	<i>Plagiobothrys mollis</i> var. <i>vestitus</i>	-	-	1A		X	
m	Pincushion navarretia	<i>Navarretia myersii</i>	-	-	1B		X	
m	Pine Hill ceanothus	<i>Ceanothus roderickii</i>	E	R	1B/BO		X	
m	Pine Hill flannelbush	<i>Fremontodendron decumbens</i>	E	R	1B/BO		X	
m	Pitkin Marsh lily	<i>Lilium pardalinum</i> ssp. <i>pitkinense</i>	E	CE	1B/BO		X	
	Pleasant Valley mariposa lily	<i>Calochortus clavatus</i> var. <i>avius</i>	-	-	1B/SC		X	
r	Point Reyes bird's-beak	<i>Cordylanthus maritimus</i> ssp. <i>palustris</i>	-	-	1B/SC		X	
	Point Reyes checkerbloom	<i>Sidalcea calycosa</i> ssp. <i>rhizomata</i>	-	-	1B		X	
	Pointed broom sedge	<i>Carex scoparia</i>	-	-	2		X	
	Prairie wedge grass	<i>Sphenopholis obtusata</i>	-	-	2		X	
	Presidio clarkia	<i>Clarkia franciscana</i>	E	CE	BO		X	
	Presidio manzanita	<i>Arctostaphylos hookeri</i> ssp. <i>Ravenii</i>	E	CE	BO		X	
	Pubescent needlegrass	<i>Achnatherum lemmonii</i> var. <i>pubescens</i>	-	-	3		X	
	Purple amonle	<i>Chlorogalum propureum</i> var. <i>propureum</i>	T				X	
	Quincy lupine	<i>Lupinus dalesiae</i>	-	-	1B		X	
m	Rawhide Hill onion	<i>Allium tuolumnense</i>	-	-	1B		X	
	Rayless layia	<i>Layia discoidea</i>	-	-	1B		X	
	Rayless ragwort	<i>Senecio aphanactis</i>	-	-	2		X	
m	Recurved larkspur	<i>Delphinium recurvatum</i>	-	-	1B/SC		X	
	Red Bluff dwarf rush	<i>Juncus leiospermus</i> var. <i>leiospermus</i>	-	-	1B		X	
m	Red-flowered lotus	<i>Lotus rubriflorus</i>	-	-	1B/SC		X	
m	Red Hills ragwort	<i>Senecio clevelandii</i> var. <i>heterophyllus</i>	-	-	1B		X	
	Red Hills soaproot	<i>Chlorogalum grandiflorum</i>	-	-	1B/SC		X	
	Rincon manzanita	<i>Arctostaphylos stanfordiana</i> ssp. <i>decumbens</i>	-	-	1B		X	
	Rincon Ridge ceanothus	<i>Ceanothus confusus</i>	-	-	1B/SC		X	

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	Robust monardella	<i>Monardella villosa</i> ssp. <i>globosa</i>	-	-	1B		X	
	Robust spineflower	<i>Chorizanthe robusta</i>	E		BO		X	
m	Rock sanicle	<i>Sanicula saxatilis</i>	-	R	1B/SC		X	
m	Rose-mallow	<i>Hibiscus lasiocarpus</i>	-	-	2		X	
m	Sacramento orcutt grass	<i>Orcuttia viscida</i>	E	CE	1B/BO		X	
m	San Antonio Hills monardella	<i>Monardella antonina</i> ssp. <i>antonina</i>	-	-	3		X	
m	San Benito evening-primrose	<i>Camissonia benitensis</i>	T	-	1B/BO		X	
	San Benito spineflower	<i>Chorizanthe biloba</i> var. <i>immemora</i>	-	-	1B		X	
	San Diego ambrosia	<i>Ambrosia pumila</i>	PE				X	
	San Diego button-celery	<i>Eryngium aristulatum</i> var. <i>parishii</i>	E				X	
	San Fernando Valley spineflower	<i>Chorizanthe parryi</i> var. <i>fernandina</i>	E	CE			X	
	San Francisco lessingia	<i>Lessingia germanorum</i>	E	CE	BO		X	
	San Francisco owl's-clover	<i>Triphysaria floribunda</i>	-	-	1B		X	
	Hidden Lake bluecurls	<i>Trichostema austromontanum</i> ssp. <i>compactum</i>	T				X	
	San Jacinto Valley crownscale	<i>Atriplex coronata</i> var. <i>notator</i>	E				X	
m	San Joaquin adobe sunburst	<i>Pseudobahia peirsonii</i>	T	CE	1B/BO		X	
m	San Joaquin spearscale	<i>Atriplex joaquiniana</i>	-	-	1B/SC		X	
m	San Joaquin Valley orcutt grass	<i>Orcuttia inaequalis</i>	T	CE	1B/BO		X	
m	San Joaquin woollythreads	<i>Lembertia congdonii</i>	E	-	1B/BO		X	
	San Mateo thornmint	<i>Acanthomintha duttoni</i>	E	CE	BO		X	
	San Mateo woolly sunflower	<i>Eriophyllum latilobum</i>	E	CE	BO		X	
m	Sanford's arrowhead	<i>Sagittaria sanfordii</i>	-	-	1B/SC		X	
	Santa Ana River woolly-star	<i>Eriastrum densiflorum</i> ssp. <i>Sanctorum</i>	E				X	
	Santa Clara red ribbons	<i>Clarkia concinna</i> ssp. <i>automixa</i>	-	-	1B/SC		X	
	Santa Clara Valley dudleya	<i>Dudleya setchellii</i>	E		BO		X	
	Santa Cruz Mtns. Pussypaws	<i>Calyptridium parryi</i> var. <i>hesseae</i>	-	-	3		X	
m	Santa Cruz tarplant	<i>Holocarpha macradenia</i>	T	CE	1B/BO		X	
	Santa Monica Mountains dudleya	<i>Dudleya cymosa</i> spp. <i>ovatifolia</i>	T				X	
m	Saw-toothed lewisia	<i>Lewisia serrata</i>	-	-	1B/SC		X	
	Scalloped moonwort	<i>Botrychium crenulatum</i>	-	-	1B/SC		X	
	Scott's Valley polygonum	<i>Polygonum hickmanii</i>	PE				X	
m	Sebastopol meadowfoam	<i>Limnanthes vincularis</i>	E	CE	1B/BO		X	
	Serpentine cryptantha	<i>Cryptantha clevelandii</i> var. <i>dissita</i>	-	-	1B		X	
	Serpentine monkeyflower	<i>Mimulus brachiatus</i>	-	-	3		X	
m	Shaggyhair lupine	<i>Lupinus spectabilis</i>	-	-	1B/SC		X	
m	Sharsmith's harebell	<i>Campanula sharsmithiae</i>	-	-	1B/SC		X	
m	Sharsmith's onion	<i>Allium sharsmithae</i>	-	-	1B		X	
m	Shasta clarkia	<i>Clarkia borealis</i> spp. <i>arida</i>	-	-	1B/SC		X	
m	Shasta snow-wreath	<i>Neviusia cliftonii</i>	-	-	1B		X	
	Shining navarretia	<i>Navarretia nigelliformis</i> ssp. <i>radians</i>	-	-	1B		X	
	Shore sedge	<i>Carex limosa</i>	-	-	2		X	

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m	Showy Indian clover	<i>Trifolium amoenum</i>	E	-	1B/BO		X	
m	Showy madia	<i>Madia radiata</i>	-	-	1B		X	
m	Silky cryptantha	<i>Cryptantha crinita</i>	-	-	1B/SC		X	
	Siskiyou Mtns. Huckleberry	<i>Vaccinium coccineum</i>	-	-	3		X	
	Slender bulrush	<i>Scirpus heterochaetus</i>	-	-	2		X	
m	Slender orcutt grass	<i>Orcuttia tenuis</i>	T	CE	1B/BO		X	
	Slender sedge	<i>Carex lasiocarpa</i>	-	-	2		X	
	Slender-horned spineflower	<i>Dodecahema leptoceras</i>	E				X	
	Slender-leaved pondweed	<i>Potamogeton filiformis</i>	-	-	2		X	
m	Slough thistle	<i>Cirsium crassicaule</i>	-	-	1B/SC		X	
	Small's southern clarkia	<i>Clarkia australis</i>	-	-	1B		X	
	Snow Mountain buckwheat	<i>Eriogonum nervulosum</i>	-	-	1B/SC		X	
	Socrates mine jewelflower	<i>Streptanthus brachiatus</i> ssp. <i>brachiatus</i>	-	-	1B/SC		X	
R	Soft bird's-beak	<i>Cordylanthus mollis</i> ssp. <i>mollis</i>	E	R	1B		X	
m	Sonoma alopecurus	<i>Alopecurus aequalis</i> var. <i>sonomensis</i>	E	-	1B/BO		X	
	Sonoma beardtongue	<i>Penstemon newberryi</i> var. <i>sonomensis</i>	-	-	1B		X	
	Sonoma ceanothus	<i>Ceanothus sonomensis</i>	-	-	1B/SC		X	
	Sonoma manzanita	<i>Arctostaphylos canescens</i> ssp. <i>sonomensis</i>	-	-	1B		X	
m	Sonoma spineflower	<i>Chorizanthe valida</i>	E	CE	1B/BO		X	
m	Sonoma sunshine	<i>Blennosperma bakeri</i>	E	CE	1B/BO		X	
m	Spiny-sepaled button-celery	<i>Eryngium spinosepalum</i>	-	-	1B/SC		X	
	Spreading navarretia	<i>Navarretia fossalis</i>	T				X	
	Springville clarkia	<i>Clarkia springvillensis</i>	T	CE	BO		X	
	Stebbins' lewisia	<i>Lewisia stebbinsii</i>	-	-	1B/SC		X	
	Stebbins' madia	<i>Madia stebbinsii</i>	-	-	1B/SC		X	
m	Stebbins' morning-glory	<i>Calystegia stebbinsii</i>	E	CE	1B/BO		X	
	Stebbins' phacelia	<i>Phacelia stebbinsii</i>	-	-	1B/SC		X	
	Sticky pyrocoma	<i>Pyrocoma lucida</i>	-	-	1B		X	
	Stinkbells	<i>Fritillaria agrestis</i>	-	-	4		X	
	Streamside daisy	<i>Erigeron biolettii</i>	-	-	3		X	
m	Succulent owl's-clover	<i>Castilleja campestris</i> ssp. <i>succulenta</i>	T	CE	1B/BO		X	
R	Suisun Marsh aster	<i>Aster lentus</i>	-	-	1B/SC		X	
R	Suisun thistle	<i>Cirsium hydrophilum</i> var. <i>hydrophilum</i>	E	-	1B/BO		X	
	Suksdorf's milkvetch	<i>Astragalus pulsiferae</i> var. <i>suksdorfii</i>	-	-	1B/SC		X	
	Sweet marsh ragwort	<i>Senecio hydrophiloides</i>	-	-	3		X	
	Talus collomia	<i>Collomia larsenii</i>	-	-	2		X	
	Talus fritillary	<i>Fritillaria falcata</i>	-	-	1B/SC		X	
m	Tehama County western flax	<i>Hesperolinon tehamense</i>	-	-	1B/SC		X	
	The Lassics sandwort	<i>Minuartia decumbens</i>	-	-	1B/SC		X	
m	Thread-leaved beardtongue	<i>Penstemon filiformis</i>	-	-	1B/SC		X	
	Thread-leaved brodiaea	<i>Brodiaea filifolia</i>	T				X	

Appendix A  
Species and NCCP Communities Considered but not Evaluated in the EWA ASIP

Species Goals <sup>1</sup>	Common Name	Scientific Name	Status <sup>2</sup>			Covered Species Determination		
			Federal	State	Other	Species evaluated in the EWA ASIP	Species considered but not further evaluated in the EWA ASIP	Decision Criteria
	Three Peaks jewelflower	<i>Streptanthus morrisonii</i> ssp. <i>elatus</i>	-	-	1B/SC		X	
	Tiburon buckwheat	<i>Eriogonum luteolum</i> var. <i>caninum</i>	-	-	3		X	
m	Tiburon Indian paintbrush	<i>Castilleja affinis</i> ssp. <i>neglecta</i>	E	CT	1B/BO		X	
m	Tiburon jewelflower	<i>Streptanthus niger</i>	E	CE	1B/BO		X	
m	Tiburon Mariposa lily	<i>Calochortus tiburonensis</i>	T	CT	1B/BO		X	
	Tracy's sanicle	<i>Sanicula tracyi</i>	-	-	1B/SC		X	
m	Tree-anemone	<i>Carpenteria californica</i>	-	CT	1B/SC		X	
	Triple-ribbed milk-vetch	<i>Astragalus tricarlinatus</i>	E				X	
	Tuolumne fawn lily	<i>Erythronium tuolumnense</i>	-	-	1B		X	
	Two-carpellate western flax	<i>Hesperolinon bicarpellatum</i>	-	-	1B/SC		X	
	Upswept moonwort	<i>Botrychium ascendens</i>	-	-	2/SC		X	
	Veiny monardella	<i>Monardella douglasii</i> ssp. <i>venosa</i>	-	-	1B/SC		X	
	Ventura Marsh milk-vetch	<i>Astragalus pycnostachyus</i> var. <i>lanosissimus</i>	E	CE			X	
	Verity's dudleya	<i>Dudleya verityi</i>	T				X	
m	Vernal pool smallscale	<i>Atriplex persistens</i>	-	-	1B		X	
	Water bulrush	<i>Scirpus subterminalis</i>	-	-	2		X	
	Water howellia	<i>Howellia aquatilis</i>	T		BO		X	
	Western campion	<i>Silene occidentalis</i> ssp. <i>longistipitata</i>	-	-	3/SC		X	
	Western goblin	<i>Botrychium montanum</i>	-	-	2		X	
	Western leatherwood	<i>Dirca occidentalis</i>	-	-	1B		X	
m	White-rayed pentachaeta	<i>Pentachaeta bellidiflora</i>	E	CE	1B/BO		X	
m	White sedge	<i>Carex albida</i>	E	CE	1B/BO		X	
	White-stemmed clarkia	<i>Clarkia gracilis</i> ssp. <i>albicaulis</i>	-	-	1B		X	
	White-stemmed pondweed	<i>Potamogeton praelongus</i>	-	-	2		X	
	Wilkin's harebell	<i>Campanula wilkinsiana</i>	-	-	1B/SC		X	
	Woolly meadowfoam	<i>Limnanthes floccosa</i> ssp. <i>floccosa</i>	-	-	2		X	
	Woolly violet	<i>Viola tomentosa</i>	-	-	1B		X	
	Woolly-headed lessingia	<i>Lessingia hololeuca</i>	-	-	3		X	
	Wright's trichocoronis	<i>Trichocoronis wrightii</i> var. <i>wrightii</i>	-	-	2		X	
	Yadon's piperia	<i>Piperia yadonii</i>	E		BO		X	
m	Yellow larkspur	<i>Delphinium luteum</i>	E	R	1B/BO		X	